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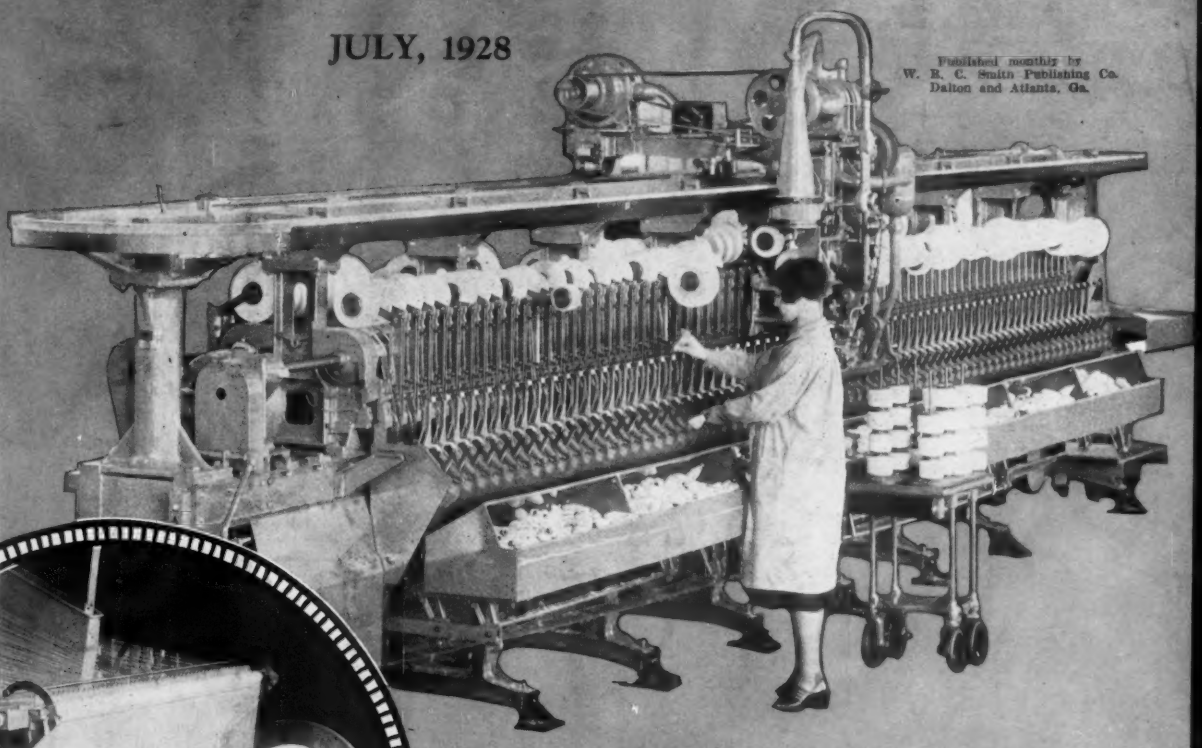

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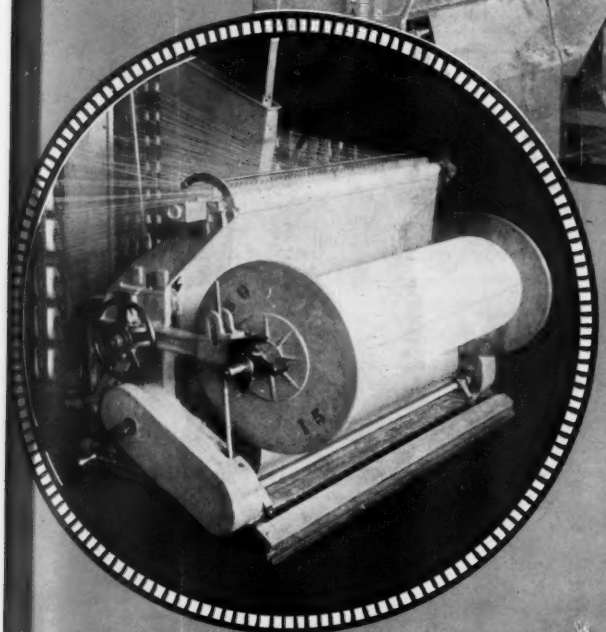

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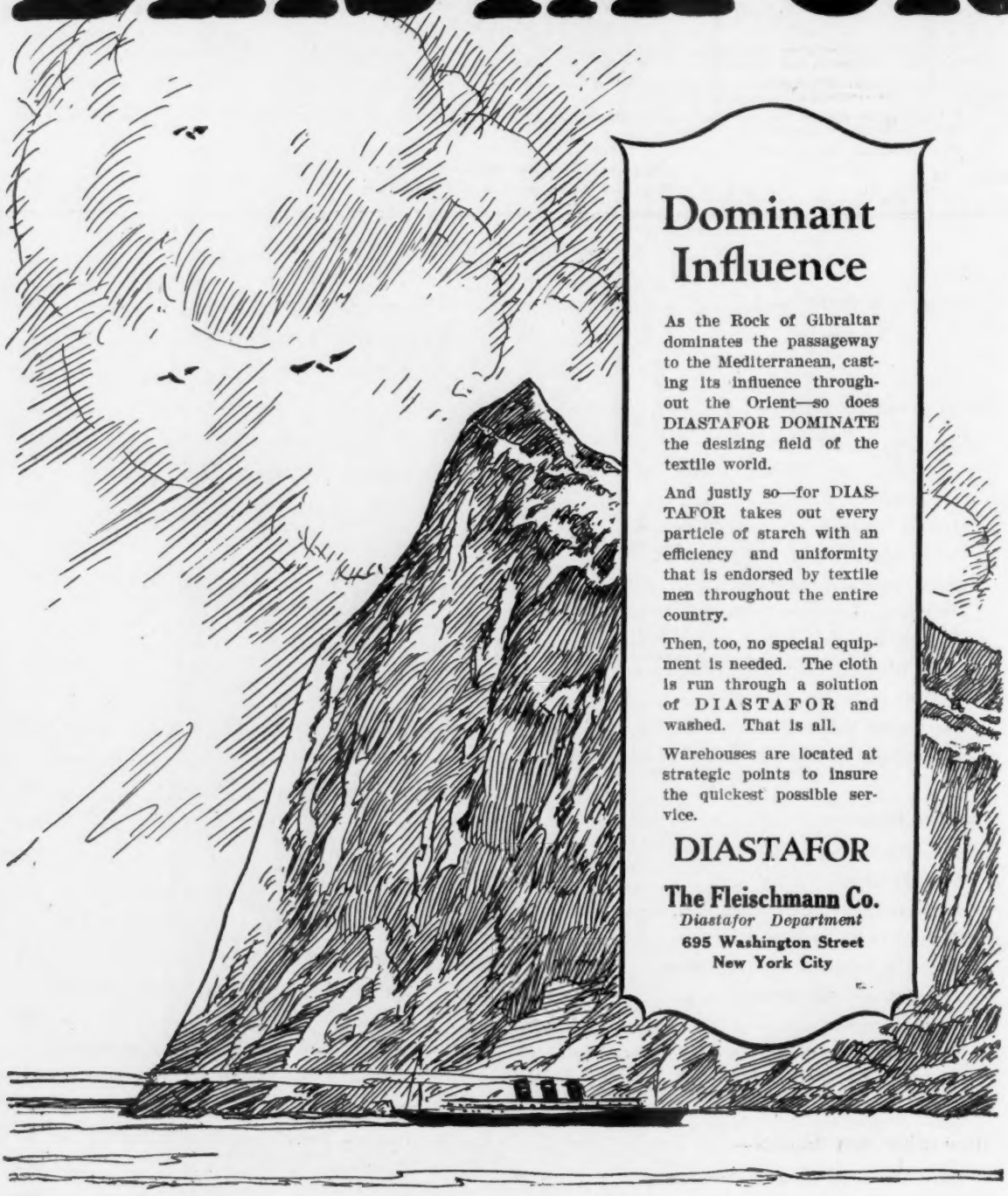

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Southern Textile Association Has Valuable Meeting and Pleasant Outing at Seashore Convention

Wrightsville Beach, N. C. — June 15th.-16th.

ANOTHER annual meeting of the Southern Textile Association has added another marker in that organization's progress. This year the convention was held on June 15th and 16th at the Oceanic Hotel, Wrightsville Beach, N. C., where the delegates enjoyed surf bathing, deep sea fishing, golf, and other diversions of the seashore resort. The sessions were full of features which provided much of value and inspiration, and reflected the growing importance and activity of the Association.

Carl R. Harris, superintendent, Erwin Cotton Mills, Cooleemee, N. C., was elected president for the coming year, succeeding L. R. Gilbert, manager, Audrey Spinning Mills, Inc., Weldon, N. C.; L. L. Brown, superintendent, International Shoe Co., Malvern, Ark., is the new vice-president; while J. O. Corn, superintendent, Pacific Mills, Columbia, S. C., was named chairman of the board of governors. Members elected to the board of governors were:

F. K. Petrea, superintendent, Swift Mfg. Co., Columbus, Ga.; W. W. Arnold, Jr., agent, Brookside Mills, Knoxville, Tenn.; W. A. Black, superintendent, Beaumont Mfg. Co., Spartanburg, S. C.; W. L. Phillips, superintendent, Social Circle Cotton Mills, Social Circle, Ga.; and Hugh S. Clarke, general superintendent, C. R. Miller Mfg. Co., Dallas, Texas.

F. Gordon Cobb was re-elected executive secretary.

The program committee had displayed vision and timely interest in arranging a series of general addresses which were of great importance. There was a splendid attendance from all parts of the South, and the occasion was a profitable and pleasant one in every respect.

President Gilbert opened the first session on Friday morning. Following the invocation by Marshall Dilling, Mr. Gilbert read the president's address, briefly and concisely recounting the activities of the association during his year's term and offering inspiration to the members for greater achievements in the future. This was followed by the reports of the various discussion division chairmen, who reported briefly upon the meetings of their various sections during the year. These meetings have all been covered in detail in COTTON following the occurrence of each, and the reader is referred to these reports for the technical discussion at these conventions. All of the reports submitted reflected an exceedingly active and profitable year in the operation of these division meetings—which can accurately be called the backbone of the association's work. A report was made also from the Texas Textile Association, which is affiliated with the Southern Textile Association. (A complete story of this meeting appears on another page in this issue.) Reports from the following divisions were read:

Carl R. Harris, the New President. Mr. Harris for ten years has been chairman of the spinning division of the Association. Last year he was vice-president

Carding Division, J. O. Corn, chairman, Meeting at Columbia, S. C., on January 25th. Reported in the March issue of COTTON.

Weaving Division, W. A. Black, chairman, Meeting at Clemson College, S. C., on February 22nd. Reported in the April issue of COTTON.

Dyers, Bleachers, Finishers and Mercerizers Division, Meeting at Charlotte, N. C., on March 17th, Paul F. Haddock, chairman. Reported in the April issue of COTTON.

Alabama-Mississippi-Louisiana Division, O. G. Murphy, chairman, Meeting at Birmingham, Ala., on March 13th. Reported in the April issue of COTTON.

Eastern Carolina Division, D. F. Lanier, chairman, Meeting at Kinston, N. C., on April 27th. Reported in the June issue of COTTON.

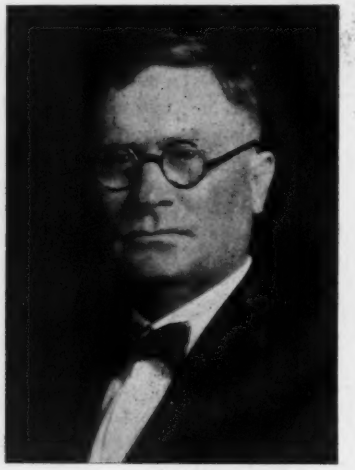
Carl R. Harris, chairman, Spinning Division, announced that no meeting of that division had been held since the last semi-annual meeting of the Association.

Following these reports, there were two excellent addresses. The first

covered "Cotton Breeding and Its Relation to Spinning Utility," and was read by S. B. Jackson, executive manager, Greer Staple Cotton Breeding Farms, Iowa Park, Texas. Mr. Jackson's organization has for several years specialized in the production of selected seed cotton, controlling the ginning as well as the growing of the staple, and in his address, he outlined their methods for this work.

Cotton Breeding and Spinning Utility.

The ideal cotton from the standpoint of the spinner, Mr. Jackson pointed out, is one that is very uniform, of good character, and free from neps. In cotton breeding work all or part of these undesirable factors can be eliminated by seed selection and the use of modern laboratory equipment. He pointed out that after reading the Arkwright test of Oliver G. Murphy, giving his method of determining staple length percentages by the use of the Baer sorter, he had added this to his laboratory equipment. Such mechanical devices for testing breaking strength of raw



L. R. Gilbert, the Retiring President.

cotton, and in making staple diagrams, gives standards upon which to base cotton breeding work each year, so that reliance upon personal conceptions of strength, length and uniformity is eliminated.

With reference to neps, Mr. Jackson declared that in his opinion, cotton which did not receive a normal supply of water will contain a larger number of them, because there will be dead seeds and immature fiber, lacking in strength. He said that while the general impression is that irrigation makes neppy cotton, he believes neppiness is caused more by having irregular irrigation, where some parts of the field do not receive a normal amount of water. "There is a prejudice against irrigated cotton," he said, "however, all Egyptian cotton is irrigated and is good spinning cotton. The reason for its high quality is due to the interest of the Egyptian Government in the production of pure seed and stringent regulations as to handling seed."

Mr. Jackson emphasized that prejudice against staple cotton from the Lower Valley of the Rio Grande is caused by mixed seed, and in this connection outlined his method of using exclusive gins—that is, gins in which no other variety of cotton was handled—in determining the results of his breeding. With cotton handled in this manner, he said, "lint length frequency diagrams made with the Baer sorter, both with our cotton and other cotton grown from mixed seed, all grown in the same character of soil under irrigation, prove that our pedigreed cotton had a smaller percentage of short fibers than the cotton grown from mixed seed. One reason for this is that a pure strain of cotton is usually a vigorous grower; while cotton fibers on the same seed do not ripen simultaneously in any variety of cotton, with cotton grown from pure seed they will ripen more nearly simultaneously than with cotton grown from mixed seed. * * *

Value of Pure Strain Seed.

"When a locality produces good spinning cotton, soil and climate should not receive all the credit, because large investment of capital and much effort are devoted to the production of stocks of pure seed. * * * Uniformity of character, and length and strength of staple, cannot be maintained in any variety unless cotton growers have access to stocks of pure seed that are reproduced under scientific methods by experienced cotton breeders. It is a recognized principle that you cannot get prime beef from cattle of mixed dairy type and beef type; neither can you get profitable milk production from cattle of mongrel breeding. The same rules apply to cotton breeding. Fully 80 per cent of the seed planted by farmers is what is known as gin run seed, sold for planting purposes by gins and oil mills, and is a mixture of all kinds of seed. However, if the farmer has cotton of extra quality and is preceded at the gin by a farmer who is growing mixed cotton of very short staple varieties, there will be something over 200 pounds of seed cotton of mixed varieties in the rolls in the gin stands. Unless these rolls are dropped and the stands cleaned out, the farmer catching his planting seed will carry home 200 pounds of this inferior seed." Mr. Jackson told here of his work in using exclusive gins; adding that farmers in a one-variety area are not troubled with the mixing so much.

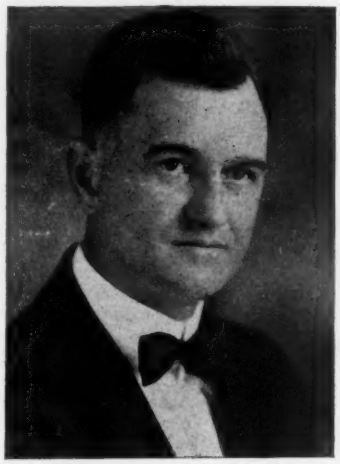
Discussing the "deterioration of the American cotton crop", Mr. Jackson attributed this partly to the use of mixed seeds and seeds of impure strains, and the fact that so many farmers tend small acreages of cotton. As to the ginning, he brought out that, "where a custom gin is running with all kinds of cotton, the ginner as a rule regulates the speed of his saws, the tightness of his roll, and his feed; so that he can take care of all the various growths that come to his gin, without changing his machinery. This means that the cotton of better staple will be ginned with too tight a roll, and this is one of the reasons for neps, gin cutting and stringiness found in cotton of better staple when ginned on custom gins that try to gin everything without changing their machinery. In his work, he brought out, more space is allowed between the saws and the ribs; a loose roll is used on the gin, with a trifle less speed of the saws. He read a test showing that at his gin in Iowa Park last season, only one bale in one thousand was gin cut.

Percentage of Different Staple Lengths.

Mr. Jackson reported here on the grade and staple estimate of the Bureau of Agricultural Economics for 27 counties in Texas and Oklahoma. These counties produced 1,034,431 bales of cotton, 186,071 of which were 13/16-inch and under in staple; 457,103 were 7/8-inch; 264,366 bales were 15/16-inch; 111,574 bales were 1 to 1 1/32-inch; and only 15,083 bales were 1 1/16-inch and better. The total

number of bales untenderable was 232,745, or 22.5 per cent. Another report on the work in Georgia, showed the production of that state as follows: 1,110,923 bales: 27,346 of which were 13/16-inch and under; 865,779 bales were 7/8-inch staple; 172,162 bales were 15/16-inch; 29,293 bales were 1 to 1 1/32-inch; and only 16,062 bales were 1 1/16-inch and better. While Georgia produced less untenderable cotton than the 27 counties in Texas and Oklahoma, Georgia produced more 7/8-inch and under staple. "This deterioration," declared Mr. Jackson, "is due to indiscriminate planting of all kinds of seed, mostly the very short staple varieties, and the ginning of all these growths by custom gins where little effort is made to gin the better cotton carefully."

In conclusion, Mr. Jackson outlined his organization's method of handling raw cotton grown from breeded seed. In order to prevent custom gins, they have organized communities where their cotton is ginned exclusively. "In order to protect our customers and ourselves," he continued, "we have established the system of using markers on both sides of each bale of cotton grown from our certified seed." In the breeding work, several hundred selections of individual stalks are taken, and their growing habits carefully watched and noted, and after harvesting, laboratory tests on staple and uniformity are made. The best seed is retained and planted scientifically, and the following year the growth, fruiting habits and other data are noted; the cotton harvested from this seed being handled in the same manner as that from the parent stalk. The seed produced in this manner is planted in multiplying blocks the next year, and by this method, Mr. Jackson stated, by 1932 they will have sufficient seed to plant 5,000 acres, all of this seed tracing its ancestry to one parent plant selected in 1927.



L. L. Brown, Elected Vice-President.

"Successful management of a breeding farm and the maintenance of high standards for those factors that are characteristic of our variety," he concluded, "requires constant effort, and the application of the most advanced methods in seed breeding, and cotton growing, on the part of our plant breeders and farm superintendents, as we must not only conduct our seed breeding operations, but also cultivate our crops in the proper manner. We must also prevent insect damage. In 1927 boll weevils and army worms arrived in such great numbers that it was impossible for us to poison them with our horse-drawn equipment in time to prevent great damage to our crop, so we engaged a plane equipped with dusting apparatus, and in one day dusted almost 1,000 acres."

Perhaps the feature of most general interest was the next address, on "A Mill and Its Folks", by Dr. Marjorie A. Potwin, who is community director at the Saxon and Chesnee Mills, Spartanburg, S. C. Miss Potwin discussed in a most engaging manner, the human relationship problems in the cotton mill village, basing her remarks upon her own experience as an Easterner who had come South to criticize and remained to aid and applaud the southern cotton manufacturers in their remarkable work. Miss Potwin spoke in part as follows:

A Mill and Its Folks.

"The future of the human factor in our southern cotton mills will be very largely just what you men gathered here are going to make it. You will fill a dual position. The people claim you as their leaders. The owners interpret their policies through you.

"A wise old philosopher has said that if one would keep his life sweet and wholesome and sane he must live close to the simple sacraments of life as they exist in the hearts of the common people. You and I are fortunate in being able to do this. For instance, when home life is attacked, and the printed page decries the breakdown of marriage and defames the sacred ties of family, does it not renovate your mind and re-establish your faith in man for you to go into the simple homes in your mill village and subject yourself for a while to the happiness and fidelity and devotion in them.

Dr. Potwin

"Or perhaps, you find yourself being carried out to sea on the popular wave of criticism against our educational system. If so, have you tried going into a nearby school and talking with the teachers of their work, and looking into the faces of the boys and girls? They are fine and clean and frank. They have not been spoiled or tricked by education, and you leave the schoolhouse knowing in your experience within it that the school is good and earnest.

"Again, perhaps, you pick up a bulletin of statistics and read no family can live a decent life on such and such a wage. The accuracy of the mathematical calculation almost convinces you that the figures must be right, but suddenly your mind snaps back to reality, and you flame with indignation as you think how false those figures are to families that we know, our very neighbors, living happy, satisfying, enviable lives, with plenty to eat and wear and to enjoy on the very wages that had been described in the bulletin as inadequate.

"Again, perhaps, you sit at home some Sunday morning and read a hard, cold smartly written accusation that church and religion have lost their virtue. The arguments seem logical, and in your respect for the printed page you find yourself almost convinced, at least shaken up and disturbed. Lay the magazine aside and go to the little church in the village, join in the fervor of the worship, listen to the prayers from the very souls of men and women reaching up to heaven and bringing Christ close among his own. You forget your doubt and skepticism. * * We must not remove ourselves from the reality around us, and substitute artificial premises for natural truths. Many things we can only know by getting the 'feel' of them, and the feel is never separable from the stream of life up and down which go the masses of the people. We cannot feel the thrill of a ball game by sitting at home and reading the box score. We can only begin to know a little bit about

industrial conditions when we discuss them in the class room, or dream about such things in an ecclesiastical study.

Cyrilla and Bishop Cannon.

"It is right to have respect for learning, but we should worship at no shrine of learning so self-opinionated that it says, 'I myself don't like the looks of what you have, and so you shouldn't be satisfied with it either.' Nor should we worship learning so superficial that it fails to notice men's natural born differences and aptitudes. I have to believe, if some collegians pity the mill people, that there are many of the cotton mill folks who wouldn't exchange places with them, either. Last winter one of the good women in our village—she is both a weaver and a housewife—asked me what I thought about a recent article published about conditions at the cotton mills. Instead of answering her question, I said, 'Well, Cyrilla, what do you think about it?' 'I think just this,' she said, 'I'd like to get that Mr. Bishop Cannon right acrost my knees and paddle him where he was intended to be paddled and teach him a little common sense.' * * *

"As in any large social group, there are all kinds of folks in a cotton mill village: the industrious, the lazy, the clean, the dirty, the moral, the immoral, the healthy, the diseased, and so an investigator with a hypothesis to prove can find anything that he is looking for. * * * But the thing for us to do is not to be disturbed by unjust accusations. For a long time we have been getting for and with the cotton mill folk those very things that the professional reformers are paid to proclaim they should have. If such reformers can't see what we have accomplished, that is their fault, not ours, and we are not under any obligations to furnish them glasses with which to see it. * * *

"A social organization survives just as long as it meets a human need. And so it will be with the mill village system. It came into existence to serve a purpose, simply to give men with labor to sell a place to live near their market. The mills needed workers and the workers needed the mills, and in this 50-50 proposition both parties profited and became prosperous. It is legitimate for folks to want the good things of life—it is legitimate to provide them."

Here Miss Potwin drew an illustration from the farm, pointing out that if a farm owner spent money to make his tenant's conditions comfortable, he is not impelled by "ulterior motives", but is simply a good employer; and that the tenant would not resort to "some Council of Agricultural Relationships" set up "perhaps in Greensboro", to act as his spokesman and chief advisor and singing about the "brotherhood of man", and slinging vile epithets about "strike", "boycott", "vile capitalism", etc. "I believe both you and your tenant would keep your heads, not questioning the principle of right involved in organization, but asking those promoting unionism to prove their right to tear down that which you have builded, and point to any success of organized labor anywhere that could not have been gained peacefully by employer and employee working together in harmony instead of discord. * * *

"The chief business of life is to live. Well, the cotton mill people are living, and aren't they making a pretty good job of it? The thing for us to do is to go on building, true to the best within us, believing in ourselves and in each other, and not allowing those who have a grudge against the world to persuade us that we, of all creatures, are the most miserable. We must even defend our treasure against the enemy who would destroy it.

"Making cotton cloth is an honorable occupation, and it is ever becoming more honorable. It is your responsibility to control the working conditions under which men make cotton cloth, and it is your privilege to put the stamp of your personality upon the surroundings under which they live. Do you not find that there are two big things which the cotton mill folks, like folks everywhere, want and expect to find in their employment? One is working conditions to which they can be loyal. No one of us is really happy except in those circumstances to which we can be loyal. We all want to work for a man we can look up to and respect and emulate. We like to think that our boss is a little superior in a whole lot of ways to anybody else's boss and the longer we work for a man the more we care about those things.

Proper Conditions Essential.

"Folks also like to be loyal to their fellow workers. We all have the feeling that birds of a feather flock together, and can't you well understand how galling it is to a fine, clean, upright young girl to have to work alongside one in whose presence she is ashamed? I wonder if you are finding in your mill that more and more the folks, especially the younger generation, want and expect, even demand, a new standard of moral and physical cleanliness.

"I know what some of you are thinking: 'The work has got to run.' Well, it will. Everything is speeding up. We expect each worker to do more than he used to do, because his machines are faster. Cotton mill work is becoming more high-classed, more skilled. You owe it to yourselves to choose your operatives carefully. The younger generation of educated boys and girls is capable of fast, high speed work. We need such boys and girls. Are we going to make the mistake of turning them aside by stigmatizing cotton mill employment, or shall we create the kind of jobs to which they can be loyal? If you had to advertise the jobs in your mill would you say: 'Wanted, Spinners—No one but a person with elementary education, of good moral character, clean, strong body and attractive appearance need apply', or would you say: 'Any old human wreck can run these sides. If you haven't got anything else to do, come and try it for a while until some other old hag comes along to take your place.' Can the cotton mills create labor policies worthy of their operatives' loyalty, or shall we stigmatize the occupation until only the misfits, the down-and-out, and the lost, claim it for their own?

"Do you not also find that cotton mill folks, like folks everywhere, value their jobs in direct proportion to the social fruits of the job? And by that I mean all those spiritual intangible phases of life that the job makes possible or brings within the workman's grasp. For ten or eleven hours a day the mill folks work. For twenty-four hours a day they live and move and have their being in the spiritual atmosphere of fellowship, love of family, friends, recreation, religion, education and home life. These are the influences that continually play upon character and temperament and disposition. These are the things from which the folks are never loose, and unless they are properly adjusted and apportioned no amount of money wages will ever

Golf and Fish Contest Prize Winners.

AWARDS in the golf tournament and fishing contest at the Wrightsville Beach meeting were presented by W. H. Willard, at the banquet on Friday night. The winners in the golf tournament were: Low gross score, Paul F. Haddock, A. Klipstein & Co., Charlotte; second low gross, Thomas E. Walsh, assistant business manager, "Cotton", Atlanta; low net, J. D. Sandridge, E. I. duPont de Nemours & Co., Charlotte; second low net, F. B. Williams, superintendent, Fairfax Mill, Fairfax, Ala. A. D. Carter of Gastonia, was tendered booby prize for highest score. Without reflecting upon Dewey's glory, it must be recorded that there were many high scorers who went swimming instead of entering the tournament.

Paul K. McKenney, vice-president, Swift Mfg. Co., Columbus, Ga., was awarded first prize for catching the largest fish in the deep-sea fishing contest, while second prize in this contest went to R. H. Hudson.

Upon receiving his cup for first prize, Paul Haddock graciously turned to Dr. Marjorie Potwin, and presented it to her as the honor guest of the convention.

make a job worth holding, or life itself seem worthwhile. It is legitimate for industry to supply the good things of life, even as it is legitimate for the cotton mill folks to want them, happiness, working conditions to which they can be loyal, and living conditions in which they can feel a pride. These are the things in which you and I have a part, indeed for which we are responsible."

Friday afternoon was devoted to a golf tournament, swimming, deep sea fishing, and other diversions. On Friday evening, the annual banquet of the Association was held, with W. M. McLaurine, secretary-treasurer, American Cotton Manufacturers Association, as the speaker. McLaurine's subject was "Seeing Things," and he furnished a thought-provoking discussion of some of the problems confronting industry and individuals at the present time.

The first feature of the Saturday morning session was an address by Floyd W. Jefferson, of Iselin-Jefferson Company, New York City. Mr. Jefferson's subject was the

Importance of the Export Market.

and in connection with this he spoke in part as follows:

"Outside of a comparatively few countries easily accessible, the total of our textile exports does not exceed four or five per cent of our product. We must find a way to reach the balance of the world, the continents of Europe, Asia, Africa, and Australia, as well as Central and South America, for curtailment of production is a negative measure and expansion of world trade is a positive measure, and the positive measure insures prosperity if worked out to

J. M. Gregg, Secretary-Treasurer.

the fullest degree. Increase our exports to ten or twelve per cent and curtailment will not be necessary.

"We start with the encouraging knowledge that our textile product is wanted and that it can be sold in competition with the manufacturers of the continent, but we too often lose sight of the fact that our South American and Central American neighbors have not the same facilities for bleaching, dyeing and printing that we have in this country, and therefore they want to buy a fabric which has been finished and which is ready for use.

"Many colored goods mills that have their own finishing machinery have found a market in New York among merchants who buy and re-sell in foreign countries, and many grey goods are sold to New York converters who re-sell the finished article.

"The textile industry is greatly indebted to these pioneer export jobbers and converters who have blazed the trail, and they will continue to play an increasingly important part in our country's development of foreign trade, but their work must be supplemented, for, without the same mill contacts enjoyed by the commission houses, they are limited to the purchase and re-sale method which necessarily restricts volume. If we are to score heavily in export markets, we shall have to hitch up to the distinctly American plan of volume production, the plan of volume distribution.

Volume Distribution Necessary.

"In our domestic markets American mills produce in volume and American merchants distribute in volume, and we must apply the same principle in opening up foreign fields. Continental labor is cheaper but our mass production partially offsets the advantage, and we are in a position to effect another economy by mass distribution. With volume production and volume distribution and their attendant economies we can place American cotton goods in every corner of the earth.

"Under existing conditions, the price which must be asked by the re-handler to cover cost of distribution and un-

J. O. Corn, the New Chairman of the Board of Governors.

usual credit risks is frequently so great that American goods fail to compete successfully with those that come from the continent. If we are to gain our proper share of export business, we must decrease the sales cost, and this can be accomplished only by direct selling in great volume with a single commission covering the cost of distribution.

"The commission house plan for domestic distribution is the one which is employed by the vast majority of southern mills. The only reason that your commission house can sell for three, four or five per cent is because it is selling in volume and the same principle exactly applies in export distribution. Unless it is done in volume, the cost of distribution which naturally influences the sale price puts American goods out of reach of the buyer.

"Where the principle of selling on commission is applied, the realization out of commissions must be sufficient to pay all expenses and leave a reasonable profit, and unless sufficient revenue is obtained out of volume, there is nothing left for adequate compensation to competent foreign salesmen and the high-salaried, well-posted men who are necessary to insure the success of an export division.

Combinations for Export Development.

"It is out of the question for the individual mill to organize for export, but it is not impossible for the selling agent representing a group of mills to study the situation, organize and possibly combine its export department with those of other houses so that export markets can be economically reached. It is conceivable that working combinations between mill, commission house and export converter with each sharing its portion of the cost might be the solution. For your part, you must realize that the expense and the risk and the extension of foreign credits entitle

Fourteen Arkwright Medals Awarded.

AT THE Saturday morning session, Marshall Dilling, chairman of the research committee of The Arkwrights, Inc., awarded fourteen additional Arkwright medals to members whose tests had been approved and accepted. These men thus attained the coveted position of full membership in this research organization of the association, which was formed to promote textile research among its members, entrance being secured upon the satisfactory completion of an assigned test covering some phase of textile mill work. The names of those to whom Mr. Dilling awarded the medals last month follow:

S. A. Black, assistant to manager, Mollohon Mill, Newberry, S. C.; R. W. Arrington, superintendent, Union Bleachery, Greenville, S. C.; G. A. Franklin, general superintendent, Sibley Mfg. Co., Augusta, Ga.; W. A. Black, superintendent, Beaumont Mfg. Co., Spartanburg, S. C.; P. A. Smith, general superintendent, Loray Mill, Gastonia, N. C.; C. M. Black, superintendent, Borden Mfg. Co., Goldsboro, N. C.; T. W. Mullen, superintendent, Rosemary Mfg. Co., Rosemary, N .C.; L. R. Gilbert, manager, Audrey Spinning Mills, Weldon, N. C.; Walter L. Davis, assistant superintendent, Proximity Mfg. Co., Greensboro, N. C.; L. E. Wofford, Inman Mills, Inman, S. C.; W. L. Phillips, superintendent, Social Circle (Ga.) Cotton Mills; J. T. Wiginton, Clemson College, S. C.; J. A. Greer, American Wool & Cotton Reporter, Greenville, S. C.; and William B. Hodge, vice-president Parks-Cramer Co., Charlotte, N. C.

your commission house to a slightly higher compensation than you are accustomed to pay for domestic representation.

"There are many commission houses selling from $20,000,000 to $50,000,000 annually in domestic markets, and if more of them would sell increasing volume in foreign fields, we would hear nothing more of over-production, and our profit-robbing curtailment program could be abandoned.

"While there is no question that foreign markets can absorb to great advantage end-of-the-season surpluses, remnants and jobs, we should not regard this outlet as a dumping ground, and it must be remembered that in many countries there are rigid anti-dumping restrictions.

"Foreign markets will quickly respond to constructive management of the same patient and analytical kind that is being used in this country and there is no doubt but what proper sales management abroad will lead to continuing returns. One of the bromidic shibboleths which we all ought to forget is the phrase, 'Why, that is less than the domestic price.' While it is true that occasional sales in foreign markets are made at slight concessions, the average is fully as high as our own country affords, and it is conceivable that an occasional sale at a small reduction might be advantageous if it takes the weight of these goods off of the domestic market."

Here Mr. Jefferson declared that recently it was developed that the existing apathy of commission houses toward export business is the result of a realization that the cost of doing export business is, in most instances, far in excess of commission revenues, and that steps have been taken to effect combinations between houses to share expenses in developing important export territories.

Departing from the subject of exports, Mr. Jefferson presented some interesting thoughts on related subjects. He predicted the development of group selling by the merging of sales organizations; declaring that present conditions warrant this—and that a result should be distribution houses which will sub-divide the products of mills into proper classes to be handled by competent managers, domestic, foreign, etc. Also, he predicted close affiliation with finishing plants and converting departments.

The photographs of Mr. Gilbert, Mr. Corn, Mr. Gregg and Dr. Potwin used in this issue, were made by Frank J. Carroll, through arrangement with Harry M. Smith, New York

"Fair Market Value."

Another suggestion was that the phrase "fair market value", rather than "cost", be applied in the selling of goods. He suggested the appointment of committees, through the Cotton-Textile Institute, to make the necessary calculations for each class of woven goods, with differentials governing the price with the upward or downward trend of the raw materials, to determine the "fair market value" of each. This, he said, would establish "fair market value" as a basis for trading with our customers. "Under our present plan, a mill or its agent frequently insists that a quoted price is under cost, and the next fellow comes along, takes the order at a lower figure, and thanks the buyer for giving him preference. No wonder we are discredited. Let us try a new plan. Let us have committees appointed by the Cotton-Textile Institute to tell us and our customers what we are entitled to receive. If we choose to take less, it will be our own funeral."

F. G. Cobb Executive Sec'y.

Mr. Jefferson referred to two more subjects in closing. One was the single price standard. "Any little old country dry goods store can put a price on its goods and the customer will respect it," he said. "How inconsistent it is that big, well-established organizations like your mills and your commission houses simply put up a price to be shot at and actually allow the buyer to make the price. If we could bring pride into play and make it inconsistent with dignity to consider a bid under the announced price, it would help to stabilize."

Suggests Cotton Goods Exchange.

The other suggestion was that it "would be beneficial to have a cotton goods exchange with a blackboard and a ticker and many of the conveniences of a stock exchange house. Here again the Cotton-Textile Institute could work out the details, and its operation need not affect adversely any existing commission house or cotton goods broker or converter or any class of trade. I would have the exchange operative so as to take out of the market the evil of mystery and secrecy and the whispered rumors of market breaks when a few bales of distress merchandise may be thrown over. I would have standard constructions classified by quality A. B. and C, and I would make it incumbent upon all members of the exchange to report sales and prices on transactions of fifty bales and over."

The second speaker of the morning was Frank R. McGowan, of The Cotton-Textile Institute, Inc., New York City. Mr. McGowan discussed "The Importance of Research Opportunities", outlining what the technical division

(*Continued on page* 932)

Meeting the Problems in Selling Cloth

An Insight, for the Mill Man, into the Details Essential to the Successful Merchandising of his Products

By Leavelle McCampbell

THE great majority of cotton cloths made in America are staple. Many mills make the same cloths. There is only a narrow difference in quality. The market is reasonably well established and you frequently find ten or twelve mills quoting a customer precisely the same price. So if you are to secure such an order you may get it because your sample is a shade cleaner, because of some past favor you have extended, or possibly simply because he likes the color of your eyes or the shape of your feet.

The same thing is true of a horse race. You see a horse lose a race by an eyelash, and you say: "Wasn't that tough luck," when the chances are it was not tough luck at all, for had the horse given all he had in him all the way around the track there would not have been an eyelash finish—he would have been four lengths in front.

The main difference between a horse race and the race for an order is that a horse race invariably provides a second prize, sometimes a third and even a fourth, but when the other fellow gets the order you draw a blank and successful mill operation is not built on such results. So it behooves us to run the race for each particular order so truly well that we do not find we have left undone something which would have brought us home ahead.

"THERE is no Santa Claus", in selling cotton goods, and there is no magic cloth which sells itself, said Leavelle McCampbell in an address to the American Society of Mechanical Engineers in Boston recently. Because of Mr. McCampbell's recognized position in the merchandising field, and his clear exposition of his method of selling cotton goods, the accompanying extracts from his talk are presented for the mill man; to acquaint him with the conditions in the selling field, with which he is vitally concerned. —The Editor.

To show you the practical working out of the principle I am outlining, I am going to describe briefly how we apply it to our own organization, how we look upon this organization from the standpoint of a manufacturing enterprise or, to better express it, an "order factory," how we break it up into its natural divisions, how we try to make these parts run perfectly both by themselves and in relation to the whole, and how we endeavor to equip and reinforce every man and every position.

The first unit is our mill contact man or "administrator" as we call him. It is his job to lay out the mill, to determine what cloths it shall make, in what quantity and when it shall make them, to price these goods intelligently, both in relation to the mill's cost and to market conditions, to pass this information along to the men on the firing line, and to help these men in every way he can, to handle such inquiries as come in over the telephone from brokers and to be ready to wait on important customers.

Every possible assistance is given to these administrators The cotton market is posted every few minutes where they have only to glance up to see it; their secretaries are ready to wait on them; a carefully arranged set of well-made samples is at their elbow; group statistics showing production, orders, shipments, stock and unfilled orders compared with our own similar figures are instantly available; sheets showing the spread between cloth prices, their costs and cotton cloth are kept on every style they run; a modern laboratory is ready to analyze in the greatest detail any cloth that interests them.

These analyses cards are filed, accompanied by samples. If the cloth is staple, we make it our business to collect and analyze samples of every competing make. This cuts both ways, for if such samples do not grade up to our own we have discovered a convincing sales argument, but if on the other hand they are better than ours, we are able to advise our mills where improvements may be made.

Providing the Salesman's "Tools."

The next unit is the salesman himself. For a salesman to function properly three things are essential: a price; a delivery, and a sample. I have shown you how the price originates with the administrator who must be prepared to reconsider it instantly if the salesman finds it is out of line. Now we come to providing accurate information about deliveries. This desk is placed on our main sales floor. When an administrator gives the mill a lay-out, he determines the estimated weekly production of first quality cloth, and this set down across a sheet, week by week. Even before orders are typed, they go to this delivery clerk and are entered on this sheet with each weekly delivery segregated. The mill's actual weekly production is entered week by week on this same sheet, and if the actual varies from the estimated the difference is carried forward just as though it were an order, in the event it is below, or as an extra production in the event it is above. The difference between each week's sales and each week's estimated production is set up as "delivery available." This book is kept up to the instant. Each Saturday the available deliveries are combined on a single sheet showing each construction and the administrators price this sheet. It is multigraphed, and every Monday morning each salesman has a copy.

We do not offer irregular goods for forward delivery. All of our mills pack such goods as seconds, twenty to forty-yard cuts, ten to twenties or two to tens and make out a card for each package. The card is tabbed on the top showing the classification into which it falls. Every two weeks these cards are tabulated and a printed list is made up that is sent to seventeen hundred separate customers. When such goods are sold, the cards representing the actual bales are taken out of the drawer and bradded to the order itself, so that it is impossible to sell the same package twice.

Seconds and shorts always have been, are and probably always will be a problem. A mill frequently finds its profits locked up in these irregular goods, so it is important that they be kept moving. We have found that this particular merchandise lends itself to selling by mail, for the lots are so small it is hard to get salesmen to focus their attention upon them. Still somewhere in this country there is a customer who will eventually buy that particular bale of goods, so it is our problem to find him and bring it to his attention as quickly after it is made as is practicable.

Handling Samples.

The third thing a salesman needs is a sample. The sample figures in nearly every sale, and it is our purpose to provide our men with the best samples it is possible to construct. Not that we want a sample to be one whit better than the product it represents, but the sample must be well made, carry our name and a definite description of the cloth so that anyone ordering from it cannot fail to describe it correctly. In addition to this, we always date samples so that if the character of stock the mill is running changes, samples not fairly representative may be discarded.

Samples should be standard in size. It is not easy to make samples the same size. We have tried many methods, but finally have had boxes built in which to make each separate fold, and brass plates cut, around which to fold the samples so as to control their interior as well as their exterior dimensions. We have tried many schemes for pressing samples, but have found none equal to that of leaving them overnight in a box under a weight. This is not only the simplest way, but by far the best.

Containers in which samples are kept must have covers that come all the way down if they are to be dust-proof, and this is highly desirable, for I know of no surer way to lose an order than to go after it with a dusty, bedraggled or poorly-made sample.

Each Desk a Selling Unit.

Every salesman and every executive in our shop has immediately at his elbow a complete set of samples. These samples are put in indexed folders, three at a time. When a folder is empty it is thrown into the filing basket, gathered up by the sample department and immediately recharged. Formerly, we had separate sample cabinets, but by putting each man's samples in the back of his neighbor's desk we found we could get them into less space, give each man a larger desk and considerably improve the appearance of the office.

We have also found in showing samples that the background against which they are shown is quite important. The great majority of our goods are light in color, so we use mahogany for our office furniture, not because it is fashionable, but because it forms a dark background for showing these samples. This shows them in relief, and helps the salesman to get his order.

Above the desk line we struggle to get as much light as we can. We keep our walls light in shade, and have the greatest abundance of artificial light wherever it has to be used.

We pay considerable attention to the office itself. Both walls and ceiling are covered with cloth before they are painted, there are carpets on the floor and marquisettes and draperies at the windows. Wherever possible cloth-covered furniture is used, for we want to establish a textile atmosphere and practice the doctrine we preach by using textiles wherever textiles can be used.

In addition to these essentials and a proper environment, it is important that a salesman be fairly compensated. All of our salesmen are paid on a commission basis. These commission rates are established both with regard to the territory covered and the difficulty of selling the individual cloth or selling particular classes of trade. We pay one set of rates in the Metropolitan district, we pay a higher set of rates east of Denver and north of the Kentucky-Tennessee line, and still a higher set beyond that boundary. Finished goods, because they move in smaller units, pay higher rates than items such as print cloths which move quickly and in volume.

When a line does not move satisfactorily we find that a re-adjustment of rate will frequently solve the problem. We also use prize contests both on particular lines and during periods of depression.

Selecting the Salesmen.

We try to give each salesman a thorough grounding in the manufacturing end. We have seldom secured able men from other houses. Most of our men we have raised ourselves, starting them at the bottom, putting them through a three months' course at the mills, and keeping them under pretty close supervision until they learn their way about. I have never had one trained in this way leave me except by request.

When we start out to choose a salesman, we have him talk to all of our executives, and to such other salesmen as are available, and rarely take a man for whom there is not an unanimous vote. We find if the men help to choose their associates they feel a responsibility in helping them to make good, and we like them to have the same attitude to new-comers that old members of a social club have toward prospective members. After all, the character of a house is the sum of the characters of the men who make it up, and we do not consider any effort too great to make certain we will not be ashamed of such men when they reach positions of authority.

We have found, too, that the open office is an asset. The president's desk is exactly like that of the youngest salesman we have. There are no partitions to make one man think he is more important than the others. If a man in our organization sticks his head above his fellows he does it by ability and performance and by no other means.

The next unit is the office force. These, too, we choose as carefully as we can, and do everything possible to make our shop a pleasant place to work. Every mechanical device that will do the office work better or quicker is installed, for no matter how great the investment, we find a machine always functions at less than an individual, and lowers the cost of office detail. We use the Powers system of punching, sorting and tabulating and find it makes readily available a variety of statistics difficult to keep individually, but most valuable in emergencies. All of this machinery is power-driven wherever possible and is immediately discarded if it becomes worn or obsolete.

Salesmen do not need many tools: scissors, a micrometer, caliper, a counting glass and a slide rule about make up the list, yet it is surprising how many houses fail to supply them and how many salesmen are content to use a set of tools of which an average carpenter would be ashamed.

We pass now from the salesman to the customer. We

divide our customers into five classes, four major and one minor, as follows:

Classification of Customers.

Converters who bleach, dye, print, finish or coat our fabrics, either with their own facilities or through job finishers.

Dealers who re-handle our merchandise in the same shape as that in which we deliver it. For instance, jobbers, mail order houses, exporters or chain stores.

Primary manufacturers or those who make articles wholly of cloth. These include manufacturers of cotton bags, cotton gloves, tents, awnings and so forth.

Garment trades form such a large division of this class that we put them in a division by themselves.

Secondary manufacturers or those who manufacture articles made only partly of cloth. Under this head we class manufacturers of furniture, shoes,, automobiles, etc.

We run a set of addressograph plates for each group. On the top of an addressograph plate there can be put twenty-four selective symbols, each of which with us represents a particular type or a particular cloth that is used. Sometimes we list a cloth under a double heading separating prospects from users, for if our communication is accompanied by samples it is of course not necessary to send samples to those who have previously used the goods. This gives us a capacity of 120 trade lists, and of these we have built up and are using 107.

When one of our men calls on a customer for the first time, he makes out a card, showing the buyer's name, the classification into which he falls and the various lists upon his name being entered. The addressograph plates are made to match the type used in the multigraph, and we are thus put in a position to address an individual letter to every buyer of any particular number we sell. We have gone even further than this and collected lists of salesmen working for our customers to whom we write at intervals, calling their attention to the merits of particular cloths in which we think they will be interested. These trade lists are constantly revised, added to and subtracted from. We have machinery to fold these letters and to seal them.

Leavelle McCampbell

We have found it to our advantage to keep a steady stream of some three thousand pieces of mail going out from this department weekly. These letters not only bring in substantial business, but keep our name before the customer, so that he thinks of us when he makes an inquiry, and help to pave the way for the salesman when he gets around.

We also feel that a certain amount of advertising has its proper place. We publish at intervals a magazine covering a good many of our lines. We have obtained very excellent results from a moving picture showing the various processes in manufacturing cotton cloth, and lend this to customers for use at sales conventions to help them stimulate in their men an interest in the things they sell.

We run daily in one of the trade papers. Our cloths are hard to advertise, because nearly all of them lose their identity before they reach the consumer. It is difficult to secure copy for this type of advertising. We tried agency after agency unsuccessfully, and finally offered one of them a considerable bonus for each such advertisement, but still without success. I undertook to write this advertising myself, and after I had written six or seven, found that they all sounded alike. Then, instead of offering a premium to an advertising agency, I offered one to our own organization, so that now anyone who writes a single column ad six inches long, that will go across my desk, gets $20.00. I was immediately flooded with copy. Some of it was ridiculous, some of it commonplace, but some of it was quite good. With a little editing it was exactly what we wanted.

The Value of Advertising.

I frankly admit that this advertising does not bring in many orders, but we have derived a great deal of benefit from it, for if one of our salesmen has devoted two or three hours to inventing new sales arguments about a cloth he has come pretty near selling that cloth to himself and when he is thoroughly sold it helps him considerably in convincing his customers. This advertising pleases the mills to whose products it is applied and strange as it may seem, I find it sells our goods to our competitors and that they are slow to decry the merits of a cloth they continually see boosted in this way.

I have endeavored to show particularly the little details to which we devote intensive consideration in an effort to establish this elusive thing we call "preference". Some of it is mechanical, but a lot of it is personal. Some men can sell goods and others simply cannot. We have tried to gather around us men of the right sort, men who like their customers, for unless a man likes his customer it is hard for that customer to like the house.

We have tried to teach these men to appreciate the effort the mills put into constructing these goods, to realize the customer's problems and above all to keep everlastingly at it. The work is hard but there is a lot of fun in it and there is a fascination about the textile business which makes men stick to it.

We have tried to set up a sales organization able to sell more goods than our mills can make, for we have found that if we can lay on the administrator's desk more orders than it takes to turn his mill it gives him a chance to discard and he winds up by taking the business suited to the mill's equipment and does not grab at the undesirable order simply because he wants to keep his mill running.

L. J. Wing Mfg. Co. Moves Offices.

The L. J. Wing Co., manufacturers of forced draft blowers, unit heaters, fans and exhausters, have moved their general offices from 352 West 13th St., to 154 West 14th St., New York City, to provide for required increased office facilities.

Cotton Waste and Its Utilization

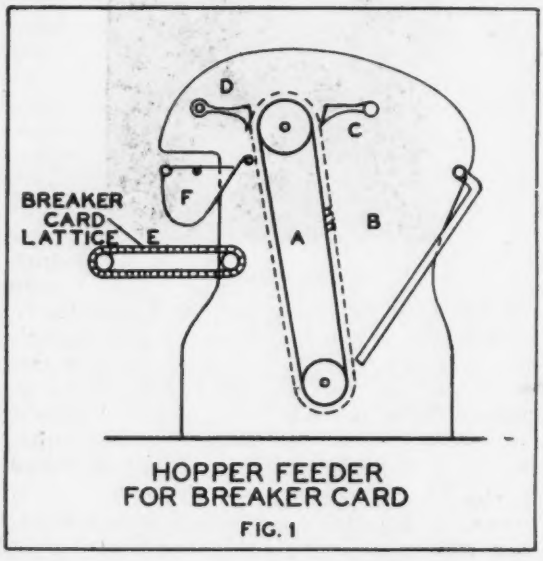
Part Two; The Breaker and Finisher Cards and Their Accessories; Advantages of Different Methods of Doffing

By Albert E. Lewis

In a preceding section were outlined the types of waste produced in a cotton mill and the approximate quantities per operation. Then there was an outline of some of the preparatory machines as used in English practice. When a low class or colored waste is used, and in small plants, the scutcher may be dispensed with, and the breaker card is then fed as described below.

Hopper Feed to Breaker Card. The waste is fed by hand into the bin *B* and is caught up by the lattice *A*, the large lumps of waste being knocked back into the bin *B* by the oscillating comb *C*. On the other side of the lattice *A* is another comb *D*, which delivers the waste into the trough *F*, which is hinged and when a certain amount of waste is in the trough *F* the weight of the waste causes the trough to invert or swing over and drop the waste onto the lattice *E* of the breaker card, thus obtaining a uniform feed to the breaker card.

When the scutcher is used, a beater of three blades is preferable. The regulating motion of this machine will ensure evenness in weight per yard of the resultant lap. The average lap for spinning 8s to 10s counts is one pound per yard of about 37 pounds weight. One scutcher will produce about 12,000 pounds in 48 hours. When a large percentage of comber waste is used, Kirschner beaters are sometimes employed. To prevent lap licking six ends of condenser yarns are run into the lap while forming. Excessive soaping also causes licking of laps.



HOPPER FEEDER FOR BREAKER CARD

FIG. 1

Breaker Card.

These cards are somewhat similar to the ordinary flat carding engines, with the exception that instead of flats, rollers and clearers are used. One roller and clearer works in conjunction with each other, and there are six or seven pairs on each machine.

The laps from the scutcher are placed on the lattice, either one or two may be run. The cotton is presented by feed rollers 2¼ inches in diameter to the licker-in. The latter attacks the presented fringe at a speed of about 1000 feet per minute.

The fibers are now brought into the sphere of action of the cylinder. The cylinder which is revolving at about 1050 feet per minute seizes hold of the fibers, which are more or less matted together, and carries them up to the worker roller, which catches the fibers by virtue of its wire points being set opposite to those of the cylinder and also by revolving at a low speed, say about 30 feet per minute. It is 6 inches in diameter. The clearer takes the fibers off the rollers, as its wires are opposite to those of the rollers, but revolve at a higher rate, about 150 feet per minute. The first roller is called the dirt roller and is of a coarser wire and moves very slowly. It is stripped by a vibrating comb. The fibers are now transferred from the clearer to the cylinder again, but in a looser condition owing to the drafting action between the opposing bodies, and the slight combing action. This action is repeated by each pair of rollers and clearers.

The fibers are now carried forward on the teeth of the cylinder until the fancy roller is reached. This is about 10 inches in diameter with its wire set in the opposite direction to those on the cylinder, and revolving in the opposite direction. This roller should revolve at least 10 per cent faster than the cylinder and set about 1/16 inch in the cylinder wire. Some authorities state a 12s gauge between wires. Its purpose is to raise the web on the cylinder wires to facilitate its removal by the doffer, hence the back of the wire must stroke the back of the cylinder wire only, the other way is wrong. It is very essential that this action is thoroughly watched, otherwise neps are liable to be caused. The open treatment and mixing of the fibers by the rollers and clearers, and the possibility of treating the waste as much as required without losing much fiber makes this type of card more preferable for waste spinning than the revolving flat card. These cards are usually 50 inches in width on the wire, making about 90 r.p.m. and taking about 1-1/2 h.p. The wire on the cylinder, doffer, roller and clearers are respectively, 90-110s, 90-120s, 80-90s, 70-90s, and the dirt roller 50-70s.

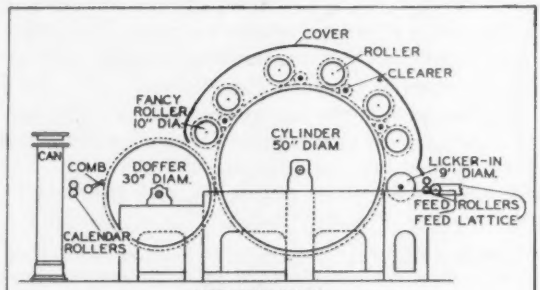
The web from the doffer is collected as in ordinary spinning and placed in the coiler can. These cans are then placed behind the table of the derby doubler.

Derby Doubler.

This machine is similar to the sliver lap machine used in the fine cotton spinning industry only it is considerably larger. As many as 90 slivers can be used according to the counts being spun. These are placed behind the V-shaped creel, and the separate slivers are passed over spoons on the knock off table, between rollers, to the calender rollers and

made into a lap for the finisher card. Sometimes half sized laps are made, but it is preferable to use a full sized lap. There is no draft on the machine except a slight tension draft. A measuring motion and a full lap stop motion are attached. Crowded slivers, riding slivers, and spaces where the spoon has failed to act cause uneven laps for the finisher card. This machine can produce about 9500 pounds in 48 hours.

With the finisher card working on the Preparation System, it is customary to use the multiple 4 or 8 coiler can method, but 4 is the usual number. The web from the carding engine is separated into 4 slivers either by a steel



BREAKER CARD
FIG. 2

blade dividing apparatus, or by placing leather dividing rings 1/4 inch wide between the card rings on the doffer. The slivers then pass through funnels, between a pair of calender rollers to the coiling motion and into cans, which are usually taken to a slubbing frame, the bobbins of which are then ready for the creels of the self acting mule or ring frame.

A production of 180 pounds of broken up cop bottoms, comber waste, etc., can be obtained per 10 hour day, with an expenditure of 1-1/2 h.p. per machine.

On the latest types of machines, it is usual to avoid using the end roving from the web, on account of the irregularity caused by bad selvages and accretions of fly. On some machines it is the practice to run the end rovings on to special bobbins, which are thrown away when full and returned to the mixing. On others it is becoming the custom to collect the end section from the doffer by pneumatic tubes, which are connected to a fan, working in conjunction with a cage or perhaps two. The air in motion draws the selvages from all the doffers, working in battery fashion, and all this waste is deposited on the floor in a fleece-like form. This ensures the collection of the selvage and a lot of side fly, without lading the surrounding air with short fibers, dust, etc., which is a great stride toward ensuring a healthy atmosphere in the card rooms.

Finisher Card.

The finisher card is similar to the breaker card, excepting the delivery end. The web from the doffer is made into separate strands of yarn about 1/2 inch in diameter. This formation is obtained by one of the three methods, i.e. ring doffer, tape condenser or steel dividers. The ring doffer is not covered from end to end with one long fillet, but consists of a number of endless fillet rings, each ring complete in itself. Suppose 30 ends are required on the bobbin, the doffer would have 30 endless fillet rings, and between each fillet an endless leather ring. For a 40-inch wide doffer, it would be spaced as follows: 28 fillet rings 1-inch wide, 2 fillet rings 1-1/2-inch wide for the ends providing there is no side ending machine, and 33 leather rings 1/4-inch wide. The fillets are made with a 1/8-inch selvage on either side and upon these leather rings rest, the idea being to hold the fillet rigid. The pitch of the rings is arranged according to the counts being spun, the number of ends on the bobbin and the gage of the spindles on the spinning frame.

As the web is transferred from the cylinder to the doffer, and since the leather rings can not grip the fibers, the web is separated into strips of 1-inch width, approximately, which are stripped from the doffer onto a dividing roller. This roller slightly condenses the web, at the same time keeping each web separate so as to avoid one web being rubbed into the other. The outer portion of the roller should be set immediately opposite the leather rings on the doffer, this ensures that the web is passed between the dividing roller. The roller is made of specially seasoned wood, highly polished and varnished, and mounted upon a wrought iron shaft, loose collars are placed at each end for setting purposes. It must be kept free from oil, snicks and cleaned every two days with French chalk. Black lead was formerly used for this purpose, but was discontinued as it tended to make the yarn shady. A slight tension draft between the doffer and the roller is employed.

The web comes to the range of action of the rubbers, after leaving the dividing roller. They consist of specially cemented endless leather bands reaching the full width of the card and present about 18 inches of rubbing surface for the webs to pass between. The term 'Rubbers" is applied

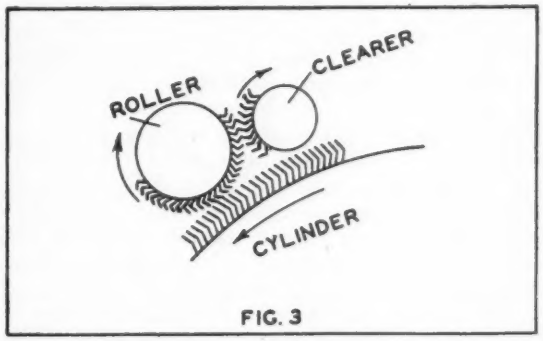


FIG. 3

because they do actually and rapidly rub or condense each web of cotton into a strand or roving, giving it sufficient strength to be guided and wound onto a long flanged bobbin, driven by frictional contact with two drums. This rubbing is occasioned by means of a double eccentric placed upon a vertical shaft and driven by means of a rope from the cylinder. A greater or lesser traverse or rub can easily be regulated. The speed is controlled by the three differently sized pulleys. It is necessary to change the speed of rubbing when changing counts. Inside the top and bottom rubbers are placed extra iron rollers with setting arrangements. These enable extra rubs by the deflection of the rubbers. With this system a loss of about 1/5 of the production of an ordinary carding engine takes place, as the web is only taken off by the filleting and the space between is lost from a productive point of view.

A doffer speed of 8 r.p.m. is found to give the best results, with a 5¼ hank bobbin.

In the leather tape system, the web is combed off the doffer by the comb. The doffer is clothed as for ordinary

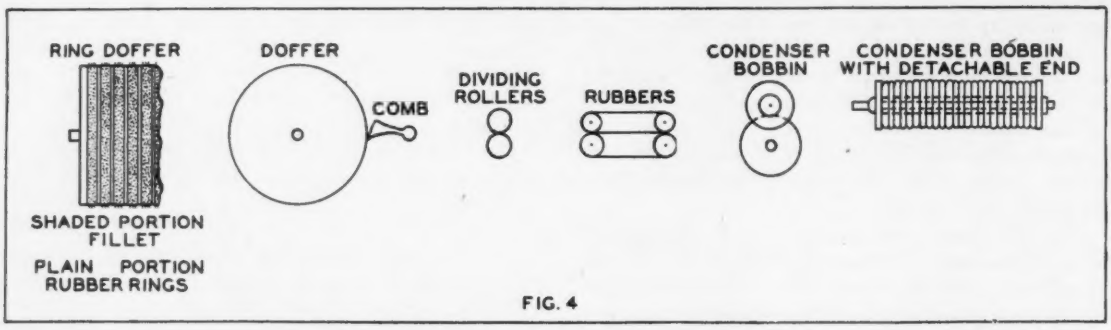


FIG. 4

cotton spinning. The tapes are endless and pass over calender rollers suitably grooved so that the tape in the groove on the bottom calender roller is opposite the metal portion of the bottom roller. This ensures that the web is presented to an alternate surface of metal and leather along the face of the rollers, and we obtain equal slivers on the top and bottom rollers. The slivers are then subjected to the rubbing movement as in the ring doffer system. See sketches of both types of condensing arrangements.

The advantages of the tape condensor over the ring doffer are the greater production and a larger range of counts, thereby enabling us to spin finer on the mule.

The narrower the tapes and the finer the counts. Care must be taken to obviate the danger of under or overfeeding, or inequalities of counts will result.

The trouble with the tape system on hard waste carding is the action of hard ends, as the tapes are not strong enough to break them, and consequently cannot divide the web, which causes endless trouble, as the fibers constantly revolve around the dividing rollers.

[This is Part 2 of an article in three parts. Part 3, the concluding section, will appear in an early issue.—Editor.]

Acala Cotton—A Romance

One hot day in 1906, O. F. Cook, a scientist who has studied the cotton plant in all parts of the world, saw, while trudging along a road in Mexico, a vagrant stalk of cotton. His trained eye caused him to realize, at a glance, that he had discovered something unusual. Inquiry disclosed the fact that the plant was a wanderer from a district where cotton was grown for primitive manufacture locally by hand. It was otherwise an unknown variety. A study was made of it and selected seed were brought to this country for growing experiments. The cotton, a medium staple kind, proved adaptable and the possessor of several qualities putting it above common American cotton. Among these qualities were high boll weevil resistance, excellent "spinnability" and unusual amenableness to dyes. It was named Acala for the Mexican community from which it came. For nearly twenty years little of practical kind came of experiments with it.

Farmers in the Coachella Valley, California, took up cotton growing and agreed among themselves to plant only one variety. Acala was selected. The growing area became the first single-variety district. The Coachella Valley farmers clung steadfastly to Acala and improved the variety by using a rigid system of seed selection. The new industry progressed. Meantime, cotton growing in other California areas had perhaps more downs than ups.

Growers in the San Joaquin Valley adopted the Acala variety and the Coachella method. In 1925, at the request of the affected farmers, the State legislature enacted a law prohibiting the growing, or even the entry of seed, of any other variety of cotton in the two areas. Many of the growers in the Sacramento and Imperial Valleys have adopted Acala, which also has spread to Arizona, New Mexico and portions of Western Texas. Thus a movement dear to the hearts of scientific students of cotton took on form. The essence of the movement is the maintenance and improvement of good varieties by rigid restrictions, for the preventing of deterioration by crossing, in different areas. There now are one-variety growing districts in old parts of the cotton belt.

There now is talk of limiting all growing in California to a single variety, which, until something better comes forth, would be Acala. There also is a demand that all bars be let down, so that, especially, ordinary short staple varieties may be introduced. The last is not likely to prevail for the present.

Acala isn't the best variety for all cotton-growing districts. It is a noteworthy addition to the large family, too many of whose members are "illegitimate," of American cottons. The growing method that evolved around it is perhaps of greater general value.

The story of Acala is only one latter-day romance of cotton in which O. F. Cook of the United States Department of Agriculture is the chief human figure. It is doubtful if any dozen scientists of other names have done half so much for cotton during the last thirty years as this self-effacing world rover and experimenter. A better self-advertiser, on the strength of less than half as much, could have made himself famous throughout the world of cotton.

Whitin Book on Wool Spinning.

Whitin Machine Works, Whitinsville, Mass., have published a limited, numbered edition of a book "The Continuous Spinning of Woolen Yarns". It describes and illustrates this process in an interesting manner.

Move into New Greenville Plant.

Greenville Belting Company have recently moved into their new plant at 315 Augusta St., Greenville, S. C., where a complete line of belting, pickers, strapping, sheep and calf skins, roller cloth, comber and drawing varnish, etc., is carried. The plant affords larger quarters and is equipped with new machinery.

PREPARATION of RAYON FOR WEAVING

Warping and Slashing

By L. A. Palina

THE preparation of rayon for warp weaving is broadly divided into two methods, that of skein sizing and machine sizing. Skein sizing has been used with a fair degree of success on a light number of ends, but experience within the last few years has developed the fact that machine sizing or slashing is probably better for weaving rayon than any other method. In skein sizing the rayon is immersed in skein form in some sizing solution and is then dried. It is then ready to be wound onto spools and warped directly onto loom beams. The principal disadvantage to skein sizing is that the skeins are sized and dried in a loose condition and therefore the filaments of rayon are not bound together by the size as is the case in machine sizing or slashing. Consequently, when the rayon is warped and reaches the loom, instead of each end being solidly bound by the size, it frequently happens that the filaments will become separated and will not be a solidly bound cohesive end, which is a desirable condition.

On the other hand, when the rayon is sized on a slasher, the yarn is run through the size and is then dried either on a cylinder or by hot air under tension, with the result that the filaments are bound together by the size and are dried in this condition, thus giving a solid and perfectly smooth end with all the filaments held together as one end.

Sizing Rayon on Slasher.

Since machine sizing is practically accepted as the best method of sizing rayon, this method only will be described in detail in this article.

The rayon is delivered to the slasher generally on a section beam, or beams, prepared from a spool creel. In this connection, some mills have slashed their rayon successfully from a spool creel placed behind the slasher, and this method is undoubtedly very successful on a small number of ends. The previous process of warping is saved and naturally any saving in labor cost is an advantage. On the other hand, many mills contend that for practically any number of ends it is better first to prepare the rayon on a section beam before slashing. They declare that a perfect section beam, or beams, behind the slasher will give less trouble than a spool creel, and there is certainly a great deal of merit in this contention.

We shall now discuss the method of preparing the rayon yarn on spools for warping.

Spooling Rayon for Warping.

The method of spooling rayon for warping is exactly the same as has been described in these articles for preparing rayon for filling by the two-process method, so that it is not necessary to go any further into the details of spooling rayon. It is, of course, possible to use a much larger spool where the rayon is to be warped than it is in preparing for filling, but since most mills use rayon in both warp and filling it is generally found that they prefer to have only one size of spools for rayon, and this spool is used for both filling and warp. The actual warping of the rayon from spools to section beams is practically identical with the preparing of cotton warps on section beams. The regular cotton warper has been found satisfactory in warping rayon, and unless a mill is planning a considerable amount of rayon warping it is believed that the best method is to use a cotton warper which has been carefully worked over to eliminate rough places on the cylinder and other points touched by the rayon.

THIS, the fourth of a series, concludes Mr. Palina's discussion of rayon preparation for weaving; the articles, beginning in February, having covered the conditioning of the yarn, types of swift and bobbin, methods of winding, for filling and warp preparation. In the August issue, we hope to present sketches showing the method of tying a weaver's knot in rayon, referred to in the May installment. —The Editor.

In preparing the rayon warps particular care should be taken to prevent loose or tight ends on the finished section beam. This is even more necessary in preparing rayon than cotton, because a loose end of rayon on a section beam can give a great deal of trouble in the slashing operation. About the only difference in warping rayon and cotton is that the warper is generally run at a much lower speed on rayon. This is in order to prevent any bad work from reaching the slasher.

The question naturally arises as to the most satisfactory number of ends to be run on each section beam, and as in the case of cotton, this is a question which can not be answered to cover all conditions. As a general statement, however, it can be said that a section beam of about four hundred ends will give very good results on the slasher. It would not be wise to attempt to run a section beam with too few ends because of the danger of stretching the rayon in drawing from the section beams in the slashing operation. Also there is no particular reason for desiring a small number of ends in multi-beam work. The only reason for using a small number of ends in cotton is in order to get more yards on a section beam. This would not apply to rayon, however, because there are hardly enough yards on a spool of rayon to fill a section beam of no matter how few ends. It is therefore considered better to put enough ends on a section beam to give a perfectly smooth surface,

and then creel in new sets of full spools during the making of one beam until the beam is filled. The question then arises as to what will happen in the slasher when the knots caused by the creeling come through. It has been found that if sufficient care is exercised in running exactly the same number of yards from each creel, the knots from the different beams will come through the slasher fairly close together and the practice, of course, is to cut off this short length of knots and put it into waste.

The Slashing Operation.

We now come to the actual slashing operation. The regular cotton slasher with a single cylinder can be used very satisfactorily in slashing rayon. It should be borne in mind that rayon does not require nearly so great a drying surface on a cylinder as does cotton, and for that reason the method of threading up the slasher for rayon is entirely different from that of cotton. This point is brought out clearly in the accompanying sketch, which shows this method of threading up.

The beams are placed in line behind the slasher just as in the case of cotton, except that in slashing rayon the sheets of yarn from the back beams are not run over and under the preceding beams in the set. It can be seen from the sketch that each sheet of yarn from each individual beam is drawn directly to the roller behind the size box. This enables broken or loose ends to be readily found and run through. The sketch shows a set of three beams, but this description will apply just as well to a one- or two-beam set.

The comb just behind the size box is for the purpose of keeping the ends perfectly straight as they enter the size box. For the three-beam set shown, which we will assume to be of four hundred ends each, the comb should have a minimum of four hundred dents, and the ends should be laid three to the dent, with each end from a different beam. Also, this comb should be expanded to exactly the width between heads of the beams or slightly less. This prevents the ends from rolling in pulling from the beams, such as would be the case if the width of the sheet of yarn at the size box were appreciably less than the width of the beams. On the other hand, if the comb is expanded beyond the width of the beams, the outer ends will rub against the heads of the beams, and this will cause trouble from broken ends on the selvage. A good practice is to have the width of the yarn in the back comb about one inch less than the width of the section beams between heads.

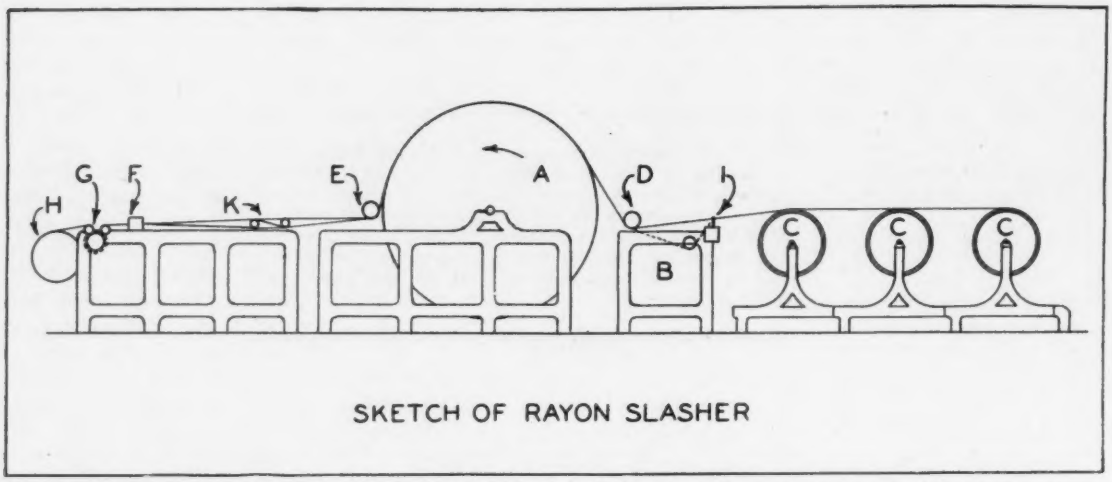
Over or Under Immersion Roll?

Opinion is divided as to whether the yarn should be run under the immersion roll. Good results have been obtained from both methods, that of running the yarn through the size solution and from merely running the yarn under the squeeze roll. In the latter method, enough size is picked up by the large copper squeeze roll to give a good sizing to the yarn, and the top squeeze roll helps this size to penetrate the yarn as well as removes the surplus size from the yarn. A better penetration is probably secured by running the yarn under the immersion roll, and this would probably be the better method where the warps are for a particularly hard weave.

It should be remembered that the tension on the yarn from the section beams should be as little as will keep the ends taut. It is unquestionable that rayon loses most of its strength when wet, so that if the tension is too heavy, the rayon will stretch when the yarn reaches the size box, and there will be danger of broken and stretched ends.

After the rayon leaves the size box it goes over the top of the cylinder but does not go all the way around as in the case of cotton. As stated previously, rayon dries much more readily than cotton, so that the sheet of yarn is thoroughly dried by the time it reaches the front of the cylinder. It then comes off under the measuring roll and goes to the beaming head. The pressure of steam in the cylinder should be controlled so as to dry the yarn properly during the time the rayon is in contact with the cylinder. It is very important to have the yarn thoroughly dried, but on the other hand it will be injured or burned if dried out too much. It will generally be found that the cylinder should be a little too hot to bear the hand.

While the rayon slasher is in operation, it will be



SKETCH OF RAYON SLASHER

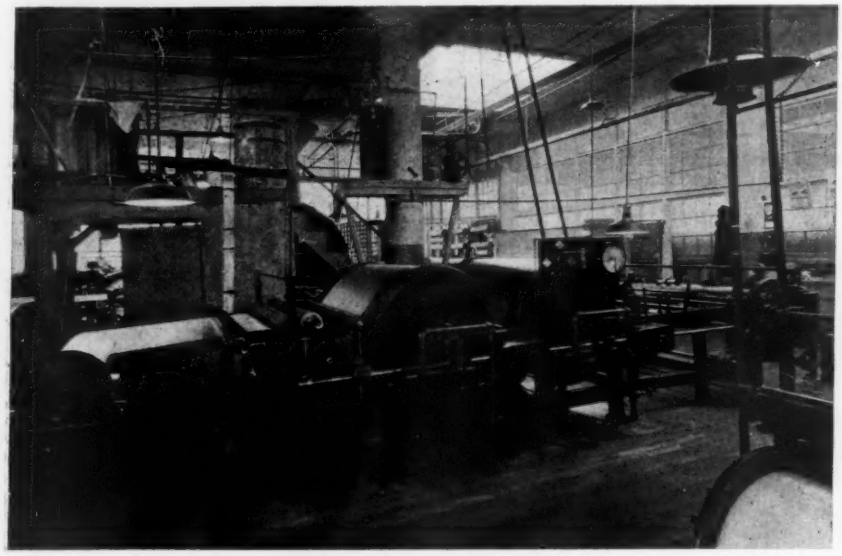
The cylinder is shown at "A"; while "B" is the jacket-heated size box; "C" the section beams; "D" the single squeeze roll; "E" the measuring roll connected to the clock; "F" the spring comb; "G" the delivery rolls; "H" the loom beam "I" the spring expansion comb; and "K" the split rods. These features are discussed in the accompanying article.

noticed that the yarn seems to creep forward on the cylinder and as a matter of fact, the total yardage of yarn wound on the loom beams will be considerably longer than was wound on the section beams. This is caused by the yarn stretching between the size box and the beaming head, but the stretch is not enough to cause any trouble. The yardage on the loom beams generally runs around ten per cent long, so that to offset this stretch, the section beams should be run short to allow for this stretch.

Figuring the Yardage.

As a concrete case, we shall give a typical example of the method of figuring the yardage on the loom beams and section beams. We shall assume that the loom beam is to contain 1200 yards of rayon, and that the spools which are used in the warper creels are large enough to permit about 6000 yards of yarn to be run off. It can therefore be seen that the yardage of yarn run from each set of spools on the warper should be exactly enough to give five loom beams of 1200 yards each or 6000 yards of sized yarn. We shall assume that the rayon stretches ten per cent in the slasher, which means that 100 yards of yarn from the section beam will give 110 yards on the loom beam. Therefore, in order to obtain the correct number of yards to run from each set of spools, we divide 6000 by 1.1 and the result is 5454 yards. It may not be practicable to run exactly the number of yards figured, but if the warper is fitted with a yardage clock, as it should be, the yardage run can be very accurate. The warper should therefore be run 5454 yards and stopped for creeling. Another full set of spools is then tied in and the process is repeated as many times as the beam will hold or for as many times as necessary to fill the order. It should be distinctly understood that the figure of ten per cent as given is *merely an example* and should not be used without checking very carefully. The mill should determine the exact amount of stretch under its own conditions and then use the method outlined to get the correct yardage on the section beams. For instance, suppose a mill wants to get 6000 yards of sized yarn from each set of spools and they figure that 5600 yards from each set of spools should be about right. Suppose they run one set under those conditions and find that the last loom beam to be made before the knots come through has 1250 yards instead of 1200 as wanted. This shows that the stretch was more than was figured and this 50 yards of yarn will probably be wasted. Instead of getting 6000 yards of sized warp from 5600 yards on the section beams they obtained 6050 yards. The amount of stretch was therefore 450 yards and the percentage would be 450 ÷ 5600 = 8 per cent. In order to correct for this stretch, they should divide 6000 by 1.08 and the result is 5555 yards to be run from each set of spools.

[*This concludes a series of four articles on this subject by Mr. Pabina. Requests for previous installments of the series will be filled as long as copies are available.—The Editor.*]



A typical Rayon Slasher Room in a Southern mill. The machine shown is equipped with two cylinders; the sketch of the author shows a one-cylinder machine.

Book on Starch Chemistry.

"A Comprehensive Survey of Starch Chemistry," is the title of a new book by Robert P. Walton, just published by The Chemical Catalog Company, Inc., 419 Fourth Avenue, New ork City. The net price is $10.00 per copy. It is in two sections—first, a symposium presenting the various phases of starch chemistry and technology, consisting of articles contributed by experts and specialists; and a bibiliography of starches and dextrins and amylases. Copies may be secured direct from the publishers or through COTTON'S Book Department.

Reduced R. R. Rates to Southern Exposition.

W. G. Sirrine, president, Southern Textile Exposition, Greenville, S. C., announces information that special rates of one and one-half fares for round trips to the Southern Textile Exposition, October 15th to 20th, have been authorized in the territory south of the Potomac and east of the Mississippi Rivers. Tickets will be sold from October 13th to 19th inclusive. Also on October 20th from stations and for trains of that date which are scheduled to arrive in Greenville on or before noon, with a final limit of October 23rd.

High Drafting

A Description of an English Method of Long Draft Spinning with Interesting Features.

BY W. HINDLE

At the present time much interest is being taken by cotton spinners in "high drafting" on the ring spinning frame. For the last 15 or 20 years many textile machinists have been experimenting and inventing devices by which "high drafting" can be performed. By the term "high drafting" we mean a draft of up to 20 or even 24 on the ring frame. The majority of spinners using American cotton, however, are inclined not to exceed 10 or 12 of a draft while for single roving medium counts they only advocate from six to eight of a draft. The question of high drafts is a delicate one, and much controversy exists between expert spinners on this matter.

It must be agreed, however, that with a frame having three pairs of drawing rollers there is only a limited length of draft obtainable, that is, if the quality and production of yarn is satisfactory. The usual custom of setting the front and second rollers just a little wider apart than the

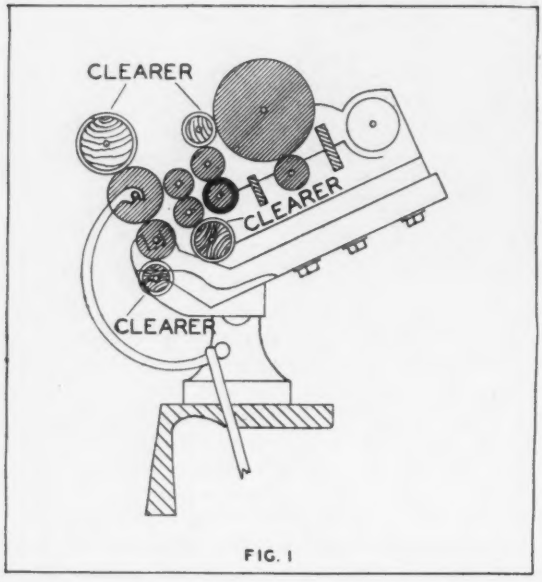


FIG. 1

length of staple of cotton being used necessarily causes this limited amount of draft.

The great interest now taken in high drafting arrangements originally came from the ingenious system whereby the fibers were carried between two bands to the nip of the front pair of rollers. The plan ultimately adopted must be simple in construction and effective in action, thus reducing initial and upkeep expenses, and a method that is easily controlled or understood by the operative.

The system described herein is one that is made by one of the largest firms of textile machinists in England and so far has given very good results. The main feature of this arrangement is an additional pair of rollers placed between the first and second pairs of rollers. It is illustrated in Fig. 1.

All cottons are spoken of and sold as being of a certain staple but we all know that there are many fibers which are shorter and some longer than the staple by which the cotton is spoken of and one of the objects of high drafting is to control the whole of the fibers during the process of drafting, and this additional pair of rollers is introduced for that purpose.

There are many things which a cotton spinner would expect from a high drafting arrangement; some of these are: Increased draft; strong and level yarn; a simple device not increasing the duties of the operative; same production as ordinary drafting ring frame; cheaper production by diminishing number of preparatory machines, by using a coarser hank roving.

We will now refer to the sketch, Fig. 1. As mentioned previously, four lines of top and four lines of bottom rollers are used. The distance between the first, second and third rows is adjustable but the distance between the third and fourth pair of rollers is not adjustable. There are four clearers as shown in the sketch, one each to front and

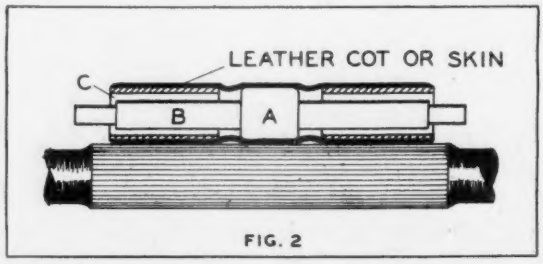


FIG. 2

third and fourth top rollers; one for the front bottom roller and one which wipes both the second and third bottom rollers. Now it may be wondered why all these clearers? well, the reason is, that a coarser hank roving is being put up at the ring frame and naturally more fly will be thrown off the roving, hence the reason for adequate clearers.

The weight of the second top roller is most important, because this roller affects the strength of the resultant yarn, and practically speaking this roller should be as heavy as possible. The combination of a close setting between the first and second pairs of rollers and a light second top roller is applicable when spinners are spinning both coarse and fine counts, but in coarser counts more strong yarn will be produced with a heavier top roller than used with fine counts.

The limitation of the weight of the second top roller concurrently with a close setting is that at which "crackers" will be made. "Crackers" is a term which implies small doubled places in the yarn which will draw out again with a cracking noise. Below are given sizes of rollers and settings for various cottons, these having been proved to be most suitable.

Rollers and Settings for American and Egyptian Cotton 1-1/16 in. Staple and More.

1st. 7/8 in. or 1 in.	Bottom.	7/8 in.	uncovered	Top.	Setting	27/32 in.
2nd. 5/8 in.	Bottom.	5/8 in.	uncovered	Top.	Setting	27/32 in.
3rd. 3/4 in.	Bottom.	7/8 in.	uncovered	Top.	Setting)	1-9-16 in.
4th. 1 in.	Bottom.	1 in.	uncovered	Top.	Setting)	

Rollers and Settings for Indian and American Cotton below 1-1/16 in. staple.

1st. 3/4 in.	Bottom.	3/4 in.	Top (uncovered).	Setting	25/32 in.
2nd. 5/8 in.	Bottom.	5/8 in.	Top (uncovered).	Setting	25/32 in.
3rd. 3/4 in.	Bottom.	7/8 in.	Top (uncovered).	Setting)	1-9-16 in.
4th. 7/8 in.	Bottom.	2 in.	Top (uncovered).	Setting)	

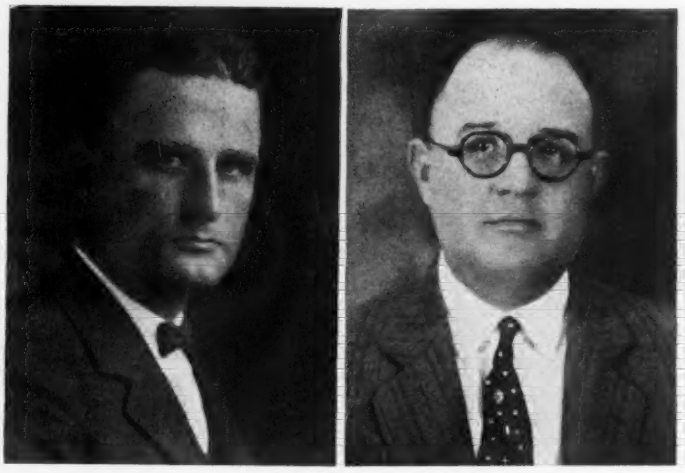
(*Continued on page* 1004.)

Texas Mill Men Discuss Mill Problems and Plan Tests at Meeting in Dallas

Clarke, Whetstone, Burow and Poole Are Named Officers for New Year

THERE was a splendid attendance at the thiteeenth annual convention of the Texas Textile Association, held in Dallas, Texas, on June 1st and 2nd; and the discussions on practical mill subjects made the occasion a profitable one. The sessions were held in the Hilton Hotel; and superintendents and overseers representing a majority of the mills of the state were present.

Hugh S. Clarke, general superintendent of the plants of the C. R. Miller Manufacturing Co., who presided at the meeting as vice-president, was elected president at the closing session, succeeding D. D. Towers, who recently removed to Georgia. Albert L. Whetstone, superintendent, Dallas Textile Mills, Dallas, was made first vice-president, and Herbert A. Burow, superintendent, Bonham Mill, Consolidated Textile Corporation, was elected second vice-president. Dan H. Poole superintendent, Sherman Mfg. Co., was re-elected secretary-treasurer.



Left, H. S. Clarke, Elected President, Texas Textile Association; Right, Albert L. Whetstone, the new first vice-president.

In opening the meeting, Mr. Clarke read excerpts from an address by Congresswoman Edith Nourse Rogers, commenting upon the textile industry, and declaring that "any trouble in the cotton industry at present is in the mills themselves"—in line with this thought he recalled to the men their responsibilities on their respective jobs, in doing what they could to serve; and in the association meetings, to render their best service to the entire industry.

After the introduction of new members, and the recognition of those members who had received promotions since the last meeting, Mr. Clarke took up the practical discussion according to a list of questions which had been assigned to different members.

Handling Re-Worked Waste.

The first question dealt with asked for methods of handling re-worked waste, and the overseer of carding at the Bonham mill made the first report, "We put it all back into a low-grade duck, about 25 per cent; and run it into a waste lap and then mix it on the intermediate picker with the regular stock."

W. F. Smith, overseer of spinning, Mexia Textile Mills, Mexia, Texas, reported that they make two grades of duck, and use their waste in the B grade, taking all card strips, etc., and running them through the vertical opener and breaker picker, and mixing this into the cotton in the opener room on a percentage basis. Asked by Mr. Clark how he controls the percentage of waste, he said it is weighed when it is returned to the opener room and distributed through the cotton.

"Our method is similar to Bonham's," said W. S. Morton, superintendent, Dallas Cotton Mills, Dallas. "We run our waste through our breakers and make a lap of it and then we put one lap on the back of our finishers—we don't have intermediates; I cut them out. We have tried mixing waste in many ways, and this I believe is the best method. Based on our experience, it is the most satisfactory method. There are two reasons for it: One is that in running the waste separately, I believe we get a better cleaning than by not mixing it with the cotton, as it is not hampered by the presence of that cotton and gives the machines a better opportunity to clean it. Another advantage is that we get a more uniform mixing when it is put in a lap.

"The waste question is always an evil, and this method itself has its disadvantages in that it takes up space and requires more in changing the machines over into a picker room where there is not ample space. Under these conditions our next best method would be this: as you know, for some time we have mixed our cotton in bins, and our method in the past has been to mix the waste in with the cotton, layer by layer, the waste first being weighed. The other method, however, is in my opinion, the best for handling waste."

"Before mixing the waste with the cotton, does it go through the bale breaker and openers, or do you mix it as it comes from the machines?", asked Jerome Thompson, of Mexia. Mr. Morton replied that "we run it right on through."

"We have discovered", said Hugh S. Clarke, "that you probably get a better cleaning by running it through and then bringing it back, but that the additional cleaning you get is at the expense of breaking strength; so we run our waste, in making B-grade, through our openers and breaker pickers, into a breaker lap and then put it up with the

cotton on the finisher lapper. Thus we get a controlled and uniform method of mixing."

After some discussion it was explained by Mr. Clarke that this question pertained only to the inferior grades of waste, such as card strips and similar things, and did not involve card sliver, roving waste, etc. Mr. Morton was asked what he did in case his waste and cotton did not balance, and he said that he balances up with cotton; Mr. Clarke adding that they have established their goods on a certain basis, and that if he runs short of waste, the thing to do is go out on the open market and buy it.

Mr. Clarke added a comment with particular reference to indigo chain dyed work. In making this, he said, "the mill must be particular in regulating the warp stock cotton from time to time, in order to keep the mix absolutely uniform. If you run a half-day on one kind of cotton and then go onto another, when it gets into the warp you will have some spools that will not have the proper co-efficient of elasticity and the spools will not all stretch the same."

End Breakage in Spinning.

The next question taken up was with reference to a reasonable amount of end breakage on spinning, making 8s to 14s yarn from 7/8-inch to 1-inch cotton, average Middling. These reports were reduced to the unit of ends down per thousand spindles per hour, with the following results:

Mr. Manley, reporting for the Miller Cotton Mills, at Waco, said his test was made on a Saco-Lowell tape-driven frame, filling-wind warp, 2½-inch ring, 7½-inch traverse,

Herbert A. Burow, Elected Second Vice-President.

4.50 twist multiple, Strict Low cotton, self-weighted middle roll, with a relative humidity of 50 per cent. He said that with a front roll speed of 178 r.p.m., on 8s, his test showed 75.4 ends down per thousand spindles per hour; and on 13s, 135 r.p.m. front roll speed, 54 ends down per thousand spindles per hour. These figures include those ends down during the doffing, which he said represented about one-third of the total.

Reporting for the Sherman Mfg. Co., Dan H. Poole said his test covered two weeks time, on 42 sides, on an average yarn of 9.33s, with a front roll speed of 175 r.p.m., 4.75 twist, Middling cotton, 60-65 per cent relative humidity. His general average was 25.5 ends down per thousand spindles per hour.

Mr. Looney, from Waxahachie Cotton Mills, Waxahachie, Texas, made a report on 10s, front roll speed 175 r.p.m., 4.25 twist multiple, Middling cotton, 65-70 per cent relative humidity, showing an average of 40 ends down per thousand spindles per hour.

The next report came from W. S. Morton, superintendent, Dallas Cotton Mills. He said that a 3½-day test on 11.80s, 164 r.p.m., front roll speed, 4.25 twist, 2-inch ring, filling build, showed an average of one-half of one per cent (including ends down at doffing) or about five ends

Dan H. Poole, Secretary-Treasurer.

down per thousand spindles per hour.

Mr. Smith, from Mexia, gave the following report: 9½ warp, 164 r.p.m. front roll, 4.25 twist, 65-68 per cent relative humidity—20 ends down per thousand spindles per hour, not including those down at doffing. He uses Middling cotton.

On 14.50s, running at 147 r.p.m. front roll speed, said A. L. Whetstone of the Dallas Textile Mills, his end breakage averaged 31 per thousand spindles per hour. He has a 2½-inch ring, Middling cotton, 4.75 twist multiple, 50 per cent relative humidity.

So great was the variation in these figures, attributable to either different methods of making the tests or different conditions, that it was decided to continue this question over to the next meeting; in the meantime having tests made according to a standard method. At that time, it is hoped, the association will also go into the causes of the different breakages.

Roll Settings on Spinning.

"On a spinning frame, what roll setting have you found best on 8s to 14s yarn running 7/8 to 1-inch average Middling cotton?", was the next question propounded by Chairman Clarke.

Reporting for Waxahachie, Mr. Looney said he had found the following best: Middle to back, 1¼-inch; middle to front, 1 1/8-inch, or as close as possible. He pointed out that the settings are dependent upon the amount of stock in the roving, etc. He said he runs 10s and 12s made from 1.30-hank roving.

Mr. Cox of McKinney next reported. He said he has some old frames and some new ones—that on the old frames his settings are 31/32-inch for the steel roll and 1 1/16-inch for the top; while on the new frames he had to open up the steel roll to 1-inch and the top rolls to 1 1/8-inch. He has a two-pound weight on the old frames; and a three-pound weight on the newer models.

"In other words," commented Mr. Clarke, "at the start the settings on the new frames, from bite to bite, were farther apart than on the old frames."

Ingram Lee, assistant superintendent, Dallas Textile Mills, said that on 1923 and 1926 Saco-Lowell frames, they set 1 1/8-inch from front to middle, and 1¼-inch from middle to back. "We get the setting between the front and middle rolls by using the little bar that goes between the saddle and lever that supports the weight as a spacer," he added.

Using a piece of paper with carbon for determining the exact distance between the bites of the rolls was explained by H. G. Edmiston, superintendent, Denison Cotton Mills, who said he has found a setting of 1 1/32-inch the point at which his yarn seems to run best. Ben Edney, overseer of carding, Belton Yarn Mills, on a finer yarn, for hosiery, said on Strict Middling, 1-inch cotton, he sets 1 1/16 to 1 1/8-inch between the front and middle rolls.

"Just as close as you can get them", was the advice of Dan H. Poole.

Self-Weighted Top Rolls.

This led up to the question of self-weighted middle roll, and Mr. Clarke declared that at Waco and Fort Worth, and Guthrie, Oklahoma, these rolls had been adopted with good success. At Fort Worth, he said, Mr. Towers had used them, dressing them down to polished steel. "My objection to that is that lint would gather on them," he continued. "and we have taken the rolls out and pulled a calf skin covering over the bare roll. We do not have a bit of trouble with them, and we can draft longer with them. We are spinning 17s from 1.30-hank single roving." He urged that mills go further into this subject.

Waste Removed in Cleaning Machinery.

The next question asked for tests on 25 to 50 bales of cotton, to determine the percentage of waste taken out at each machine, up to and including the percentage of invisible waste, giving the grade and staple of the cotton.

Herbert A. Burow, superintendent, Bonham, Texas, made a complete report on this, as follows: Forty bales of cotton, gross weight of 20,987 pounds, were opened; 28 bales of Middling and 12 bales of Strict Middling. On this basis, he read the following report:

		Per cent
Gross Weight	20 987 pounds	
Bagging from 40 bales	409 pounds	.0195
Ties from 40 bales	360 pounds	.0171
Total bagging and ties	769 pounds	.0366
Net pounds of cotton available	20,218 pounds	
Waste from First Vertical Opener	235 pounds	.0115
Waste from Second Vertical Opener	128 pounds	.0063
Waste, 5 sections English cl. trunk	70 pounds	.0034
Waste, Breaker pickers	154 pounds	.0076
Waste, intermediate pickers	47 pounds	.0023
Waste, finisher pickers	48 pounds	.0024
Total waste removed from cotton	682 pounds	.0335
Total Clean Cotton Received	19,424 pounds	
Invisible Loss, or Unaccounted	112 pounds	.0055
Total waste, Bagging and Ties, and Invisible Loss	1,563 pounds	.0744

Mr.Manley gave figures from the Miller mill at Waco, covering a test of 13 weeks on Strict Low cotton, giving the percentages as follows:

Bagging and ties	3.52 per cent
Openers	3.85 per cent
Pickers (Breakers)	1.03 per cent
Pickers (Finishers)	.61 per cent
Dust room	.52 per cent
Total	9.53 per cent

Mr. Clarke pointed out here that he has a regular practice of weighing his dust room waste each week—that he requires the overseer do this personally.

DAN H. POOLE'S REPORT ON LOOM STOPPAGE.

Week Ending	Filling Break	Gouts	Draw Backs	Filling Broke on Change	Stopped on Change	Loose Ends	Slack Ends	Slams	Warp Out	Flagged	Empty Quills	Broken Ends	Knots	Misc.	Total
Jan. 14 45 Hrs.	267	30	62	28	106	39	7	93	21	89	40	426	46	107	1361
Feb. 4 50 Hrs.	210	14	111	34	126	30	8	25	24	66	18	487	85	112	1350
Feb. 25 40 Hrs.	252	8	34	30	77	18	4	23	11	53	19	378	47	85	1039
Mar. 31 40 Hrs.	226	14	66	24	51	19	6	25	16	70	15	482	62	103	1179
Apr. 28 40 Hrs.	314	14	76	22	88	12	15	28	20	68	62	340	73	116	1248
Totals 215 Hrs.	1269	80	349	138	448	118	40	194	92	346	154	2113	313	523	6177

The figures from the Sherman mill, as given by Mr. Pool, follow, for Middling cotton:

Bagging and ties	3.61 per cent
Openers	1.35 per cent
Pickers	.85 per cent
Invisible	3.3 per cent

C. A. Mast, superintendent, Itasca Cotton Mfg. Co. Itasca, read the following figures, on Strict Low and Middling cotton:

Tare	3.4 per cent
Opener motes	2.02 per cent
Breaker motes	.25 per cent
Finisher motes	.38 per cent
Total	6.25 per cent

W. F. Smith of Mexia reported next, stating that they use Middling cotton. He said at the beginning of the month they had 91,162 pounds on hand, and opened up 105,944 pounds, making a total of 197,106 pounds. Their production for the month was 91,387 pounds, leaving in process 105,480 pounds, with a waste of 2,239 pounds. This was distributed as follows:

Bagging and ties	4.1	per cent
Vertical openers	1.3	per cent
Pickers	1.3	per cent

Their total waste was 10.8 per cent, leaving 4.1 per cent invisible or unaccounted for.

Here Mr. Clarke called attention to the fact that at Waco his openers took out the large percentage; this was due probably to his equipment, explaining that they have a Whitin upstroke, a vertical, and a Centrif-Air. He added that they do not take out nearly as much card fly and strips as formerly.

Mr. Edney gave the poundage figures for 25 bales of Strict Middling, as follows:

No. 5 lattice opener	98 pounds
Vertical openers	152 pounds
Breaker pickers	56 pounds
Intermediate pickers	48 pounds
Finisher pickers	64 pounds
Card fly, motes, dust house	60 pounds
Total	478 pounds

The final question discussed at the evening session was, "What variation do you have in the weights of warper beams?"

Variation in Warper Beams.

Mr. Smith said that at Mexia, on 9½s to 12¼s yarn, 476 pound beams, his variation ranges about two per cent from high to low.

"I took a test over two weeks time on every beam, 68 in number, and find that our variation from the highest to lowest was 2.4 per cent," reported Mr. Burow.

At Waco, Mr. Manley said, a test shows 3½ per cent variation from high to low, on 500 beams, 327 pounds each. W. S. Morton said his variation was 3¼ per cent from high to low.

In connection with this topic, Mr. Clarke brought out that at the Waxahachie meeting five years ago, reports showed some variations up as high as ten per cent; and he declared that the fact that "the highest man reporting today is not as high as the lowest man at that time", shows that progress is being made along the lines of increased efficiency.

The Life of a Shuttle.

The meeting was adjourned until Saturday morning, when the practical discussion was resumed. The first question on which figures were asked was, "How many shuttles per year per loom do you consider a fair allowance on an automatic loom running 6- to 12-ounce goods?" The figures reported were:

Waxahachie, 3 shuttles per loom per year.
Mexia, 2 shuttles per loom per year.
Waco, 1.3 shuttles per loom per year.
Dallas, 1.5 shuttles per loom per year.
Sherman, 1.9 shuttles per loom per year.

Percentages of size on 8-ounce duck were next requested, and the reports were: Waxahachie, 10 per cent; Hillsboro, 10 per cent; Mexia, 12 per cent.

Reports on Loom Stoppage.

The next question was, "Give the things you have found which cause the most loom stoppage." Broken ends—that was the consensus of opinion as to the most general cause. In connection with this question, Mr. Poole submitted the accompanying comprehensive report on loom stoppage, covering a period of 215 hours, on twenty-four 40-inch modified D. Draper looms, running on 36-inch 10-ounce duck, with 2,706 warp ends, 9.60s warp and approximately 6.00s filling. This tests shows an average of 287 stops per day on 24 looms, an average of 11.9 stops per loom per day, or 1.19 stops per hour per loom. In the 215 hours of this test, each loom averaged stopping once every 51 minutes, for all causes.

The final feature discussed was, "What improvements have you made in your mill during the past year that might be helpful to all of us?"

Recent Improvements in the Mill.

The first man responding was Mr. Burow, who said that by conditioning his filling he had practically stopped kinky filling. He does this by catching the quills at the end of a chute from the spinning room in a box, which is sprinkled lightly with a can several times while the box is filling up.

In outlining his improvements, Mr. Clarke said, "We started with the weaver's knot, for one thing, and that reduced our loom stoppage, and then we began putting in the self-weighted middle roll on spinning. We have taken out every blade beater in the mill and are using the latest type Buckley beater. We have reduced our beats per inch in the picker room to a total of 74, and have reduced our beater speeds to under 1,000 r.p.m."

"Do you use the Buckley in the finisher?", asked Mr. Edmiston.

"No, we have the carding beater there", replied Mr. Clarke, who then called upon Mr. Edmiston to outline his improvements.

"There's nothing much that we have done especially," replied Mr. Edmiston. "We have just tightened up all the way around. We changed our cotton some, and have tried to keep our machines in better shape. We have made some improvements trying to make a better cloth."

"It occurs to me that there is a decided improvement," observed Mr. Clarke: "When we realize that we must tighten up we have taken a long step forward."

"We have gotten up a system of keeping our warps," said Ingram Lee. "Every morning and every night the weaver takes a report of all of the different styles, and we plan our sets that way, and try to keep about 24 hours ahead on our sets, and have standardized our beams as far as we could. That has been a big help to us in keeping our warps ahead."

"We have changed the draft on our cards from 95 to 130," said Mr. Smith of Mexia, "keeping the card sliver at 54 grains, and we get better cleaning and more uniformity on the drawing sliver. We increased our breaking strength on 9½s from 81 to 202 pounds; and improved the running of the work in the weave room, and get a higher percent-

(*Continued on page* 1004.)

Mercerizing Cotton

William B. Nanson Continues His Discussion of Mercerization Emphasizing Need for Care After Dyeing.

In the drying of skein yarn the exposure to the air gives, in many instances, the best results, because the water is not completely removed, and the yarn is therefore, after drying, in the proper "condition". The process is, however, slow and requires a considerable amount of space. Yarn, however, may be dried in ordinary stoves or drying rooms in which it is suspended on poles. A drying machine or continuous dryer may also be used if the heat is not too high. Skein yarn may be scoured by boiling, after bundling, for several hours in soda ash at 3 per cent, or Turkey red oil, etc., and then washing in the kier first in hot and then in cold water. If it is found necessary to gas the yarns there are machines for doing this either before or after mercerizing and drying, but it must not be forgotten that in addition to the gassing frame an apparatus for unwinding the yarns from the skeins to the bobbins would be required in the majority of cases, i. e., if the finisher did the gassing after the mercerizing.

Next, after the yarn is mercerized and finished, is to handle the skeins properly for the unwinding of them while they are rewound onto spools, bobbins, cones or tubes. It is preferable to put them upon poles. As they are wanted they should be gently untwisted and also as gently pulled out straight without giving them a rough snap. The rough snap usually given skeins by operatives is very undesirable. It strains the yarns and causes breakages.

The next matter of importance is to find out which is the outside and which is the inside of the skein of yarn. If, when laid out flat and placed upon the wrists and held out flat, the skein shows no loose yarns nor wavy effects inside the skein it is not wrong side out. But if the skein is straight and tight on the outside and loose and wavy on the inside it should be turned inside out. All ends and bands should be cut off, not broken off, breaking being bad for the skein. The speed of the winding machine should be moderate and not excessive, and it is much better, experience has told us, and the skeins make better work and less waste if they are placed on self tightening swifts or individual reels which are made to turn on their centers. Of course it stands to reason that skein yarn which is wound while the skein is riding at ease on individual reels of the self tightening and self centering type will be less injured than by any other system.

Mercerizing Cotton Warps.

Cotton warps are usually run continuously and mercerized on a machine very similar in construction to a long chain dyeing machine but with the guiding rollers and their bearings of stronger construction and with the squeezers at each end of the caustic box with a double nip, i. e., with three rollers. To make high class mercerized yarns, 15s to 80s single and ply yarns, it is necessary to have an up-to-date mercerizing plant of a continuous character something like the following:

The warps as received at the mercerizing plant are of the ball or long chain type and must be in good order. They are then put on a rack at the back of the mercerizing machine and the machine is threaded up. Fifty-four strands are put up at once and these strands are then run over a roll onto a preliminary machine which consists of a series of oscillating bobbins of yarn which pass around the warp strands as they pass through the machine and wrap a string around the strands, binding three warps into one if the yarns are medium, or four into one if the yarns are fine. This is done to hold the strands intact and prevent the yarn from becoming steam blown in the boiling vats. After the yarn has passed through the various boxes of boiling water, caustic, acid and cold water, it is taken to a vertical drying machine. This machine usually consists of 18 dry cans and the yarn is passed around the dry cans some fifteen times to insure a thorough drying, which is important. A machine of this character will dry from 18 to 24 warps at a time .

The dried yarns then go to the quiller room, when the binding threads are removed and the mercerized yarn is passed through splitting machines. The purpose of these machines is to again separate the yarn or warps into different cans for the next operation which is quilling. Also, this machine removes the string that was placed around the warps at the beginning of the mercerizing process. This string is rewound onto bobbins and may be used over again.

The yarn goes from the splitting machines into separate cans and from these it passes to the quillers and the quillers put the yarn onto bobbins all ready for the winding operation which puts the yarn onto cones or as desired; in fact, they can be beamed.

Most of the yarn mercerizing of today is done in the long chain or warp form because it goes through the machines continuously and in a uniform and positive manner so that there is almost no chance for any variation in it as is the case with ordinary skein work. It is, perhaps, of not quite so high a luster as skein work of a high order but is preferred, on account of its uniformity, for knitting and weaving as it does not show the same defects of streakiness after dyeing.

All warp machines, though they may differ in some small details, are arranged from wetting out to dyeing to run in a single range and continuously though they have to achieve the same results as the skein machines. They usually consist of fifteen to seventeen boxes arranged in series one before the other and each is fitted with guide rollers and squeeze rollers of a heavy pattern. The yarn, in rope form, passes from one box to another and is kept and held just at its right degree of tightness or tension by the different rollers used throughout the machine.

The warps, as they come from the spinners to the mercerizing plant, are in balls, made usually on the warper or on the balling machine, and they are usually of 380 ends and about 6000 yards in length. A machine of usual size will take 54 warps. Since the warps are usually com-

bined in sets of three, it will be seen that both heavy and fine yarn can be run at the same time if the sets are made of the same size by mixing the heavy and light warps in the same set.

In the first place the 54 warps, or balls, are all put up behind the mercerizing range and they are drawn through a binding machine as described. In this they are passed through eighteen tubes, i. e., there are three warps or ropes of 380 ends each to each tube. These each have a binding cord wound around it spirally. The bobbin does it automatically from end to end. This keeps each rope intact and from broken ends and all chances of catching onto anything. The yarn being bound around and kept from all harm it is guided into the boiling out liquor which usually occupies the first two boxes. There are different ideas among mercerizers on this matter, but it is the idea of the writer that the yarn merely requires thoroughly wetting out in hot water in these two boxes, though some persons recommend a solution of three per cent of soda ash, some, Turkey red oil, some caustic soda and so forth. If something must be used, Turkey red oil or Monopole oil soap, about one per cent of each, is the best, though it depends largely on the character of the goods, at least the writer has found it so.

The next box must be cold water, as it is important that the goods must be delivered as cold as possible to the caustic which is used in the next two or three boxes.

The actual mercerization begins in the three caustic tanks. Sometimes to save space and time the guide rollers are raised above the machine, which I think is a good idea, as the goods get a longer caustic without reducing the speed. The caustic is usually kept at the temperature of the room or about 65 degrees F., and at a strength of about 50 degrees twaddle, and the time for treating with the caustic is about two to three minutes or slightly shorter than skein mercerizing because the latter includes wringing and other things. The squeeze rolls again are an advantage in the warp machines as they assist materially in the thorough impregnation of the yarn.

It is always best if the caustic soda solution is made in an outside tank and circulated by a pump through the machine; in this way it can be kept at one strength and one temperature.

It must always be remembered that if the strength of the liquid falls below 22 or 24 degrees twaddle it will not mercerize—it is too weak.

The mercerizing of the ropes is finished in the washing which takes place in the next three or four boxes and while the yarn is still held tight. It is supposed that the washing not only removes the caustic soda from the yarn, but if it be done by a limited amount of water it, the caustic, can be saved for use again. A counter-current washing at about 120 degrees F., if the quantity of water is small, will give us a liquor at from 8 to 10 degrees twaddle. This will give us the most of the caustic to be used again in a recovery system.

The operations which follow may be practiced in the cold and consist of scouring with sulphuric acid at two or three per cent. This acid may then be washed out clean, or, the last trace of acid may be neutralized with ammonia and rinsed out, or the ropes may be finished at one operation if so desired.

In this connection it would be well to say that some inorganic acid like formic acid is always better to use in all places instead of sulphuric acid; it requires little or no washing and the goods are never tender as is the case with sulphuric acid. The warps are now finished so far as the mercerizing is concerned and are ready for the dryer. In this machine they must be dried as cool as possible to keep the luster bright, but must be dry. They then have the binder thread removed which (i. e., the binder thread) is rewound onto bobbins and used again and they are then split back into their separate warps and rewound through the quiller onto cones.

It is of interest to note that devices for compensation of speed are provided at two places in the mercerizing range. This is a good idea because they will take care of any difference of speed which might occur in so long a machine—the whole range being over 155 feet long. It is quite necessary that the goods, be they skein yarn, or warp, or piece goods should be thoroughly and evenly impregnated with the caustic lye or they will cause uneven mercerization; also they (the goods) should be evenly and well boiled out or wet out. It must also be seen that no traces of sulphuric acid be left in the goods. All these cause uneven dyeing and mercerizing and show. If the mercerized yarns or pieces are to be used on a natural color or bleached, this unevenness may not effect the luster much, but if the yarn is to be dyed they are bound to show, when knitted or woven.

For this reason the goods must be evenly dried. Both wet and dry spots in the goods will dye up unevenly both in luster and in color, all of which goes to show that mercerizing makes some difference in the cotton cellulose, and, therefore, as far as dyeing or bleaching the mercerized fabric is concerned one cannot watch matters too closely.

A mercerizer must be careful, in this, as in all cases, in the selection of his yarn and therefore the quality of the fabric he designs to make and the price he gets for it must guide him. In a general way it may be said that Sea Island yarns are the best and cost the most. Then come the Egyptians; they take a silky luster and give an even, soft yarn. The long stapled American peeler can be mercerized satisfactorily, however, and are much used. Also yarns from Mississippi bottoms are suited for this purpose. Even the coarser kinds of short stapled goods give fair effects if the yarns are combed. Combed yarns are more paralleled in the combing operation than carded yarns and are so much better, in fact the quality of a mercerized yarn depends more on the way it is spun than the stock it is spun out of, this of course in reason, as an even and well spun yarn makes for good mercerizing.

Nearly all the yarn mercerized for knit goods is two-ply. The character of the twist is, therefore, of the first consideration, a reverse twist in the doubling is accounted the best but there is little appreciable difference in the finished goods. A loosely twisted thread on the two-ply will show the highest luster, but this is governed largely by the strength of the yarn.

So far as the mercerizing itself is concerned it must be remembered that a considerable amount of heat is generated by the action of the caustic soda and the cotton, and that the caustic liquors will become heated beyond a reasonable limit if the temperature is not kept down. This is usually accomplished by running the caustic liquor through a coil of pipe immersed in the cold water box or

by cooling the tank which holds the caustic or by some of the various ways.

The tension must also be enough and also uniform while the goods are in the caustic soda. The tension in mercerizing yarn is simply to prevent the goods from contraction and this contraction is usually about 25 per cent. Most, however, of the mercerized fabrics are treated in the woven piece, and its success depends largely upon the way the machine is made.

[Editor's Note. This is the second of a series of three articles on mercerizing. The concluding article will appear in an early number.]

An Example of Southern Rayon Development

The manufacture of rayon in the South is attracting increasing attention by the frequent announcements of new plants for this purpose and of extensive additions to existing plants. Producing the industry's newest fiber, this branch is growing with rapidity. Perhaps this development is not entirely familiar to those occupied in other fields of textile manufacture, and for these, the following quotations from an article by R. E. Cullen, assistant director of sales, Du Pont Rayon Co., Inc., will be of interest. The article appeared in a recent issue of *The DuPont Magazine*. It gives interesting information on the plans of this representative organization in this field.

Mr. Cullen states that "rayon consumption in the United States during 1927 totaled approximately 100,000,000 pounds, of which 75,000,000 pounds represented domestic production." He continues:

"Using this total of 100,000,000 pounds of 1927 as a basis, it is interesting to compare it with the 1924 consumption, which was 40,500,000 pounds. Accordingly, we find that American consumption of rayon increased 59,500,000 pounds in three years, or approximately 148 per cent.

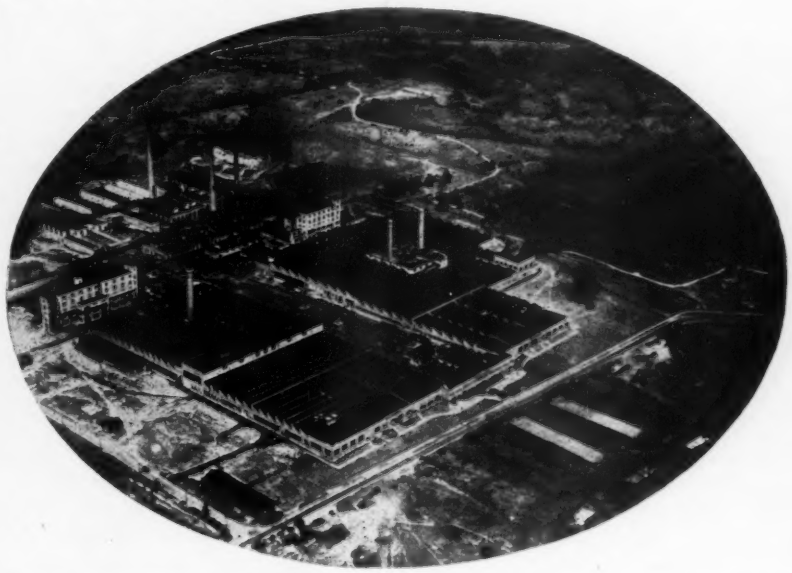
"Further analysis of these figures reveals that 19,000,000 pounds, or about 19 per cent of all rayon consumed in the United States in 1927, was used within the southern states, while in 1924 it is doubtful whether southern consumption topped 7,000,000 pounds.

"This gives a fairly comprehensive view of the great strides made by rayon during the past few years, particularly in the South. There the increases have been largely due to two factors: First, the very noticeable increase of rayon consumption by the "old line" cotton and hosiery mills; and second the southward movement of established mills from other sections, plus the erection of many new ones for the manufacture of rayon fabrics to be used by other than the cotton and hosiery interests.

"The Du Pont Rayon Company has not only been in close touch with the South's textile progress in recent years but has also contributed to it. The company has greatly enlarged its facilities to take care of an ever-growing list of southern customers, many of whom have been transplanted from other localities.

"The first move to keep pace with demands was the erection, and operation, early in 1926, of the company's Old Hickory plant in Tennessee. Built on the site of a war munitions factory, and operated by a force of nearly 4,000 employees, this plant provides a central point in the South from which Du Pont rayon is distributed. At this writing, the annual production approximates 10,000,000 pounds.

"Old Hickory consists of two complete manufacturing units, with a third unit almost ready for operation. It is located in a beautiful section of the Cumberland River valley, about twelve miles from Nashville. Nearby, the self-contained company village of Old Hickory provides homes, stores, theater and club facilities for the employees and their families.



"Still another important expansion of the Du Pont Rayon Company is now under way near Richmond, Virginia, where construction work is being speeded on a complete new plant capable of producing approximately 3,500,000 pounds of rayon yarn annually.

"These two industrial expansions of Du Pont Rayon interests in the Southland have come within the past two years and have proved necessary in view of the constantly growing use of rayon by southern mills. As a matter of fact, there is every evidence that rayon consumption will show greater percentages of increase in the South during the next few years than in any other section of the country. Moreover, those of us who have closely observed the situation regard this increasing usage as significant of the South's determined bid for a dominant position in America's textile field."

CURRENT TOPICS

Flood-tide Appropriating.

The people of this country evidently like to see money —their money—roll into the United States Treasury for expenditure on various—and often doubtful—public projects. This view certainly is sustained by the appropriating proclivity of the present United States Congress. After a long period of retrenchment, Congress took the reins and doled out funds like a sailor on a spree following a long time at sea. This happened with a national campaign at hand. Politicians thus seem to have no fear of the charge of extravagance.

Funds appropriated or authorized for expenditure at the recent session of Congress total $4,628,045,035. Despite this, taxes were reduced a little more than $200,000,000. The biggest group of beneficiaries are the corporations. Their Federal income taxes were lowered from 13½ to 12 per cent. It is the last outright curtailment of Federal taxation that this generation probably will know. Hereafter there will be re-adjustments, with probably enlargement of total revenues, only.

Congress would have gone further still in the matter of appropriating but for the steadying hand of President Coolidge. But even the President was not as insistent on restraint as formerly.

Interdependency.

Lloyd S. Tenny, until recently the United States Department of Agriculture's chief economist, in a speech the other day made a statement that sounds so surprising as to be almost shocking. Yet it is so true that it is platitudinous. He said:

> "Agriculturally, the world is smaller today than the State of Vermont was a hundred years ago. The farmer of Vermont or the farmer of Iowa today is influenced more by conditions in Great Britain, Argentina, Australia and other parts of the world than the farmers of Vermont one hundred years ago were influenced by the happenings in the State of New York. The American farmer must recognize this change in agricultural conditions."

He might have drawn a more striking comparison as to industry other than agricultural. In a manufacturing sense the world is smaller today than was a New England village a hundred years ago. Goods that were formerly made alone for each community are now given world-wide distribution. Economic independency is a condition of the past and will prevail again in no average community, no country and no large quarter on this earth. Economically the world is now a vastly integrated interdependency.

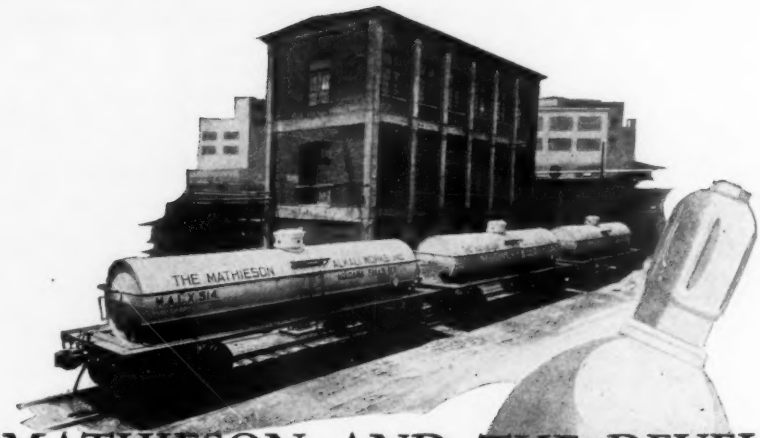
How many persons take that huge fact into account in considering economic problems? It is ignored particularly when solutions are sought in the political realm. Governments still are made to assume that national self-sufficiency is economically possible, and this, probably more than all else, accounts for the economic confusion and the world trade recession of the last seven or eight years.

Those who would pursue this subject are advised to read a book written by Frances Delaisi, a Frenchman, in 1925. It is entitled, "Political Myths and Economic Realities." The treatise is not that of a radical or extremist. Its argument is that political theories and economic developments have been running in opposing directions and should, even must be, and actually are partially being, brought into closer harmony. It is a book that those who cry for salvation from the Government every time they meet with a difficulty should, by all means, read.

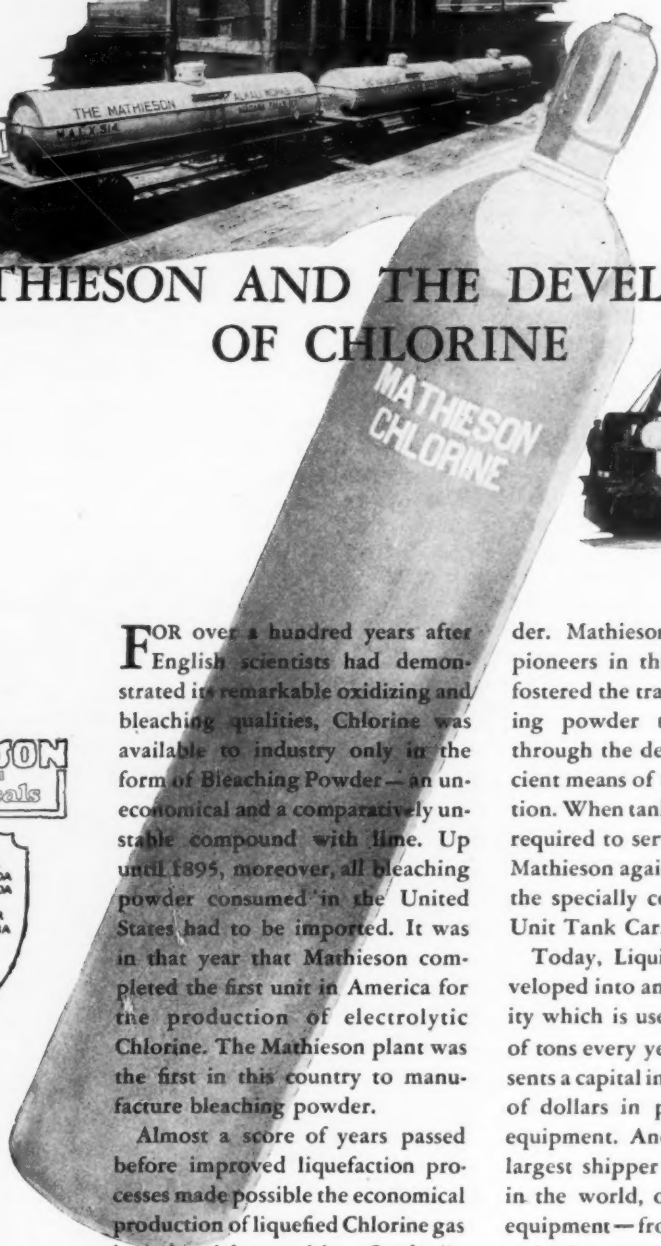
Congress Hears Much About Cotton.

Cotton was the subject of much discussion during the first session of the Seventieth Congress, being talked of more than probably ever before during a similar period of time in that quarter. Little was done about it, but the discussions may be a forerunner of important legislation at the next session. Only two bits of new legislation as to cotton were enacted at the recent session. One consists of a special appropriation of $5,000,000 for fighting the pink boll worm which has newly—and more formidably than ever before—invaded this country. The funds will be used in the main for indemnifying farmers in southwestern areas, near the Mexican border, wherein cotton growing will be prohibited as a measure of rigid quarantine. The other is a provision of an appropriation act, forbidding Department of Agriculture forecasts as to cotton prices. It is a Congressional reaction to the bearish prediction by the U. S. Bureau of Agricultural Economics that preceded the price break of September, 1927.

The price recession of last Fall occasioned the bulk of the talk about cotton on the floors or in committees during the recent session of Congress. As an outgrowth of these discussions there are pending bills, reported favorably by Senate and House committees for further Federal regulation of cotton marketing. The bill pending in the Senate was introduced by Senator Ellison D. Smith of South Carolina, and the one in the House by Representative Carl Vinson of Georgia. They are very much alike. Both would apply present Federal laws for regulating the grain exchanges to the cotton exchanges. That is to say, the big exchanges would be licensed by the Secretary of Agriculture who could require of each of them very rigid rules governing the operations of members, particularly as to buying and selling for future delivery. The Department of Agriculture would supervise those operations, having access to all records and power to interfere with practices of the "manipulative" kind. Each bill would establish by law the principle of southern warehouse delivery on New York exchange contracts. This has been discussed for a quarter of a century, and there is much difference of opinion among all groups of authorities as to how it would work. There are differences of detail between the Senate and House bills as to how the practice would be employed. The House bills would allow an offset when deliveries are made in the



MATHIESON AND THE DEVELOPMENT OF CHLORINE



MATHIESON
Industrial
Chemicals

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LIQUID CHLORINE
BICARBONATE OF SODA
MODIFIED VIRGINIA SODA
SODA ASH
BLEACHING POWDER
ANHYDROUS AMMONIA
AQUA AMMONIA

FOR over a hundred years after English scientists had demonstrated its remarkable oxidizing and bleaching qualities, Chlorine was available to industry only in the form of Bleaching Powder—an uneconomical and a comparatively unstable compound with lime. Up until 1895, moreover, all bleaching powder consumed in the United States had to be imported. It was in that year that Mathieson completed the first unit in America for the production of electrolytic Chlorine. The Mathieson plant was the first in this country to manufacture bleaching powder.

Almost a score of years passed before improved liquefaction processes made possible the economical production of liquefied Chlorine gas in industrial quantities. Gradually Liquid Chlorine in steel cylinders began to displace bleaching powder. Mathieson was one of the pioneers in this development and fostered the transition from bleaching powder to Liquid Chlorine through the design of safe and efficient means of Chlorine transportation. When tank car shipments were required to serve larger consumers, Mathieson again was a pioneer with the specially constructed Multiple-Unit Tank Car.

Today, Liquid Chlorine has developed into an industrial commodity which is used by the thousands of tons every year and which represents a capital investment of millions of dollars in plant and container equipment. And Mathieson, as the largest shipper of Liquid Chlorine in the world, offers the utmost in equipment—from single-unit and multiple-unit tank cars to 100 and 150 lb. cylinders—for adequately serving every class of Chlorine consumer.

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South; the Senate bill would allow none. This last might radically curb New York Exchange operations which are almost exclusively in future contracts for hedging or speculation.

Both bills were drawn with the cotton growers' interests chiefly in mind and the end aimed at by each measure is the protection of growers from "manipulations" that may narrow the cotton market and depress prices. In the discussions anent the bills it was contended by many persons that the drop in prices last Fall was caused by manipulations that were expedited by the bearish forecast put forth in September by Department of Agriculture economists. One big firm of cotton merchants was charged with doing most of the "manipulating". Members of the firm denied the accusation. Department of Agriculture economists denied that their bearish forecast had anything to do with the general lowering of the cotton price level. Some persons said that the forecast had everything to do with it.

Apparently, nearly all southern members of Congress are in favor of legislation of the kind proposed in the Smith and Vinson bills. Senator Thomas H. Carraway of Arkansas voiced objection to both bills. He sponsored a measure, favorably reported by committee, which would greatly curb volume of operations in cotton futures. He would outlaw trading having interstate attributes of any kind that is not based on actual or prospective cotton and with delivery and acceptance positively in view.

Senate and House committees held hearings on bills put forth by Senator Joseph E. Ransdell of Louisiana and Representative H. P. Fulmer of South Carolina providing for the standardization of cotton bale covering and the selling of cotton by net weights. Most persons appearing at the hearings favored the measure which is endorsed by the U. S. Department of Agriculture. The Senate committee on agriculture passed favorably on the bill.

Committee hearings on matters relating to cotton extended through practically the entire session of Congress. Verbatim reports of the hearings contain much data on the general, and especially the marketing, problems of cotton.

Foreign Trade Trends.

It is probable that the foreign trade of the United States will attain a value of ten billion dollars this year, and at the same time it may take the lead of all countries. The value of imports and exports during the first quarter of 1928 was approximately $2,275,000,000, at which rate the total for the year will be beyond ten billion. The annual total already closely approaches that of Great Britain, and this country's is bound soon to take the lead.

Great Britain's foreign commerce amounts to 40 to 50 per cent of that country's total trade, while, even with a ten billion dollar annual value, this country's will be only about 10 per cent of its total trading operations. But its importance is out of ratio to its comparative size. Good and bad conditions, prosperity or depression, are going to depend more and more on outlets abroad for increasing surpluses of American goods.

The character of these surpluses is changing radically. They used to consist mostly of raw materials. Cotton has been for nearly a century and a half, and no doubt long will continue to be, this country's foremost export product. But raw materials are receding proportionately as a class of American exports. All crude materials going out of the country during the first three months of this year were worth about $300,000,000. There was an actual falling off as compared with the same period of last year. This was due in some part, however, to price changes. But during the first quarter of 1928 a total of $522,000,000 worth of finished manufactures went out of the country.

At the same time we are importing more crude materials and fewer manufactures, though for the first three months of this year the value of the first was slightly less and of the second silghtly more than for the first quarter of 1927. These changes were due, too, no doubt to price changes. Food imports are tending to increase and now exceed exports, a fact worthy of more consideration than has been given it in connection with farm relief.

While this country is the world's first producer of textile material, and also of manufactured textiles, it is interesting to note that it is the second or third greatest importer of textile materials and manufactures. The value of silk and silk products now brought into the country approaches half that of both cotton and cotton manufactures shipped out of the country—a fact that merits much thought in quarters concerned with the big problems of textiles. It seems remarkable that nearly $18,000,000 worth of cotton goods should have been imported into the country during a period of three months. Yet we exported nearly twice as much. But despite the country's partial monopoly of cotton producing, there was brought into the United States during the recent three-months period $14,500,000 worth of raw cotton. But a country that can afford to buy from abroad nearly $15,000,000 worth of diamonds and $11,000,000 worth of "art works" during a three months following the Christmas season need not worry much about its material well-being.

What the Southern Mills Are Doing.

Nine mills operated as individual units in the Cannon group in North and South Carolina have been consolidated into one company known as the Cannon Mills Co., with main offices at Kannapolis, N. C. The mills involved are the Cannon Mills, at Concord and Kannapolis, N. C., and York, S. C.; the Cabarrus Cotton Mills, Concord and Kannapolis, N. C.; Gibson Mfg. Co., Concord, N. C.; Kestler Mfg. Co., Salisbury, N. C.; Norcott, Gibson and Franklin Mills, Concord, N. C.; Patterson Mfg. Co., China Grove, N. C.; Barringer Mfg. Co., Rockwell, N. C.; and Hobarton Mfg. Co., Concord, N. C. Economy in operation is given as the chief reason for this action. Cannon Mills, Inc., selling agents of Cannon products, is included in the merger. No change in personnel is contemplated.

Gastonia Weaving Co., Gastonia, N. C., is installing 12 new Jacquard looms, with plans for further enlargement. Woven labels and other narrow fabrics are produced. Harry A. Musard is manager.

Nokomis Cotton Mills, Lexington, N. C., have installed 24 new 40-inch Draper looms. Contracts for the Kendall Mills, Inc., Thrift Division, Paw Creek, N. C., have been let through the office of Lockwood, Greene & Co., Engineers, Charlotte, N. C., as follows: Sewerage system, the McLelland Co., Charlotte; erection of 86 bath rooms, Harrison-Wright Co., Charlotte; roughing in and setting of

Pointing the Way to Progress

Yarns may be made from all grades of cotton, but no yarn can be a *low-cost* yarn unless it is efficiently spun and of sufficiently high quality to run economically in the remaining processes. Since the spinning frame is the key machine in the production of *good* yarn, we earnestly recommend the new Saco-Lowell spinning frames to your attention at this time. They produce *good* yarn at low cost,—a low cost that repeats in subsequent operations.

The time to install new equipment is NOW, when competition is keenest. May we send an engineer to survey your needs? There is a coupon attached, for your convenience.

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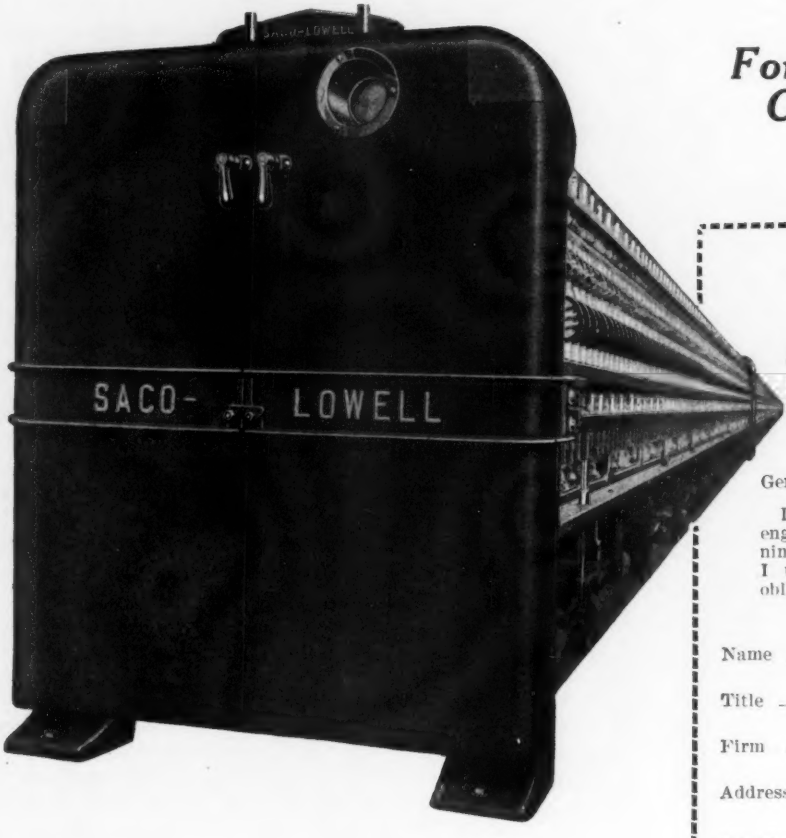

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Saco-Lowell Shops
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Gentlemen:

I would be glad to have your engineer call to discuss spinning frames, (when_____). I understand that this will obligate me in no way.

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Title _____

Firm _____

Address _____

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bath room fixtures, J. F. Threat, Charlotte; and furnishing fixtures and roughing in material for bath rooms, Hajoca Corp., Charlotte, N. C.

Chetwick Silk Mill, Asheboro, N. C., have let contract to Borrow & Lamb to erect a $50,000 plant.

Stehli Silks Corp., High Point, N. C., has completed the installation of 42 additional looms.

Wilson Rayon Products Corp., Wilson, N. C., has started operations producing rayon fabrics for underwear, neckwear, scarfs, etc.

Alamance Novelty Mill, Burlington, N. C., is erecting an addition, to which a number of looms operating in another section of the plant will be removed to bring the weaving under one roof. The unit will be one-story, 106 x 106 feet.

Manetta-Monroe Mills, Monroe, N. C., have made considerable enlargement to their plant.

Joanna Cotton Mills, Goldville, S. C., have purchased 35,112 spindles and preparatory equipment from the Lowell (Mass.) plant of the New England-Southern Mills. This equipment will be removed to Goldville and placed in operation.

Gaffney Mfg. Co., Gaffney, S. C., in connection with their improvement program, plan the replacement of 900 looms at the rate of about 150 looms per month. The new equipment will be installed in a new building which is now being erected.

It is reported that the Drayton Mills, Spartanburg, S. C., will erect a new weave room, to be 540 x 200 feet. Lockwood, Greene & Co., are the engineers. The new building will be of brick and steel construction with steel window sash and saw-tooth roof. A cloth room, 90 x 200 feet, will be included.

Clinton Silk Mills, Clinton, S. C., have been incorporated, and will erect a building containing 20,000 square feet of floor space. It will be the southern branch of the Hazelton Heights Silk Co., Hazelton, Pa., and will contain an initial equipment of 50 looms and auxiliary machinery. Sidney M. Edelstein & Company are the engineers.

Lund Company, Rock Hill, S. C., will erect a weaving plant for the manufacture of Jacquard draperies, corset cover cloths, etc. It is planned eventually to install 500 Jacquard looms. It will be the southern branch of the Lund Textile Corporation, Fisherville, Mass. Sidney M. Edelstein & Company are the engineers.

According to report, the Brighton Mills, of Passaic, N. J., which built the Southern Brighton Mills, at Shannon, Ga., about two years ago, are considering the removal of the remainder of their equipment at Passaic and Allwood, N. J., to the southern location.

Swift Mfg. Co., Columbus, Ga., are installing a complete new humidifying system.

Cotton Mills Products Co., Natchez, Miss., are replacing their plain looms with automatic Draper equipment.

Klotz Silk Mfg. Co., Clinton, N. J., will erect a silk plant at Blackstone, Va., to consist of 100 looms, and to be similar to the mill now under construction by the same company at Reidsville, N. C.

Philadelphia Office of National Moved.

National Aniline & Chemical Co., Inc., have removed their Philadelphia office and warehouse to 200-204 South Front Street. S. W. Wood is resident manager.

New England Mill Situation.

The depression in the New England textile industry has continued during the past month and has attained the most serious proportions noted in some years. Fine and fancy goods production continues less than 50 per cent capacity and there has been no change in the New Bedford strike situation after many weeks of idleness. Business has been so light that mills outside of New Bedford have not felt any effects in the way of enlarged demand while in that city the inquiries have been so light that there has been no warrant for an attempt on the part of manufacturers to reopen the mills.

Radicals from outside the city of New Bedford continue to play a prominent part in maintaining the agitation among operatives. Investigations made into the wages paid in New Bedford compared with other places have shown as expected an average wage in excess of most other large textile centers. This would be true also if the ten per cent reduction had been accepted. Manufacturers state that they expect to pay above the average wage because of the wide variety and great volume of fine and fancy goods production handled.

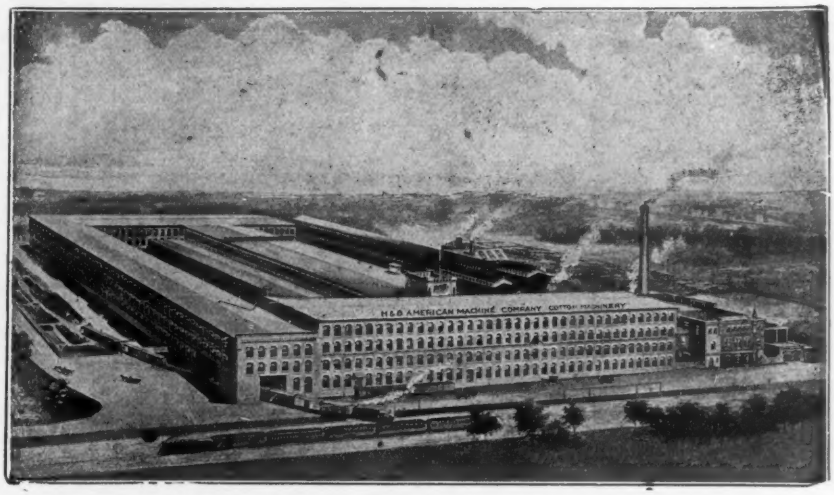
A suggestion has been made that an adoption of the extension or multi-machine attendance might enter into a compromise settlement of the strike. It first came from one of the local newspapers. That some such system will eventually be adopted is expected by most manufacturers but to insure its success a substantial investment will have to be made for the hiring of engineering experts and for the changing over or rearrangement of machinery. Manufacturers would not agree to undertake this expense without ample assurance that cooperation of the operatives might be relied upon after a reduced wage scale was put into effect. If the new plan could be worked it would probably result in a practical restoration of the wage reduction to the skilled operatives competent to work under the proposed new plan.

Conditions at Fall River continue poor. Barely 25 per cent of the capacity output of print cloth mills is being operated. The two large print works, American and Algonquin, have continued to operate at capacity and recent financial reports showed that both of them did a profitable business in 1927. A consolidation of the three leading banks in the city holding most of the mill paper has been effected and an investigation is now under way by Homer Loring and others to determine what form a reorganization or a consolidation of several leading mill corporations shall take.

It is believed that financial backing has been assured to warrant expectations of a consolidation of at least a million spindles under combined management at some time within the coming year. It will entail the concentration of management and merchandising and possibly the inclusion of a finishing plant. Through such a consolidation it is believed by some of the experts who have been going over the figures that it may be possible to reduce the cost of operation and merchandising by at least five cents per pound. Up to the present time nothing more than tentative investigations have been made but it is authoratively stated that a very thorough study of the situation by engineers and financiers is under way.

The situation among mills in northern New England has

COTTON MACHINERY



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grown distinctly worse. A proposition has been made to the stockholders of the Great Falls mills of Somersworth, N. H., looking toward a liquidation of the property. The company has notes of $3,000,000 falling due on July 1st and the commission house that has endorsed them declines to renew them under the present state of trade. The companies' tax valuation was dropped $400,000 but the rate was raised $2.00 a thousand so that the saving in that respect was nominal. During the war a large new building was erected at high cost and it has had a lot to do with the present situation in the company. It is generally believed that plans will be adopted for the liquidation of the corporation.

A proposition has also been made to the Androscoggin mill stockholders in Maine to liquidate that property. A protest has been entered by Bliss, Fabyan, & Co., of New York, who are large stockholders, and the matter will come up before a meeting in the near future. It is stated at Lowell that outside of the Merrimac Company and the Boott Mills it is doubtful that any of the cotton mills in that city are making money. This applies to the Pepperell Manufacturing Company's branch located there and formerly known as the Massachusetts and to the Nashua Manufacturing Company's branch known as the Suffolk Mills, the latter of which is operating on a four day week schedule.

At Nashua, N. H., the Nashua Mills are operating at about 70 per cent of capacity, blankets being the principal product. The Jackson Mill of the Nashua Company in the same city which turns out Indian Head cloths, sheetings, etc., is on a four day week schedule. The York Manufacturing Company in Maine is operating about 2,000 looms on fancy cotton goods and rayon and is running hardly 150 looms on ginghams, which used to be its chief product The Pepperell Mills at Biddeford are curtailing more than 25 per cent and the Lewiston Bleachery, a branch of the Pepperell Co., is operating about 40 per cent.

The Lowell branch of the New England Southern Mills has been sold and the Joanna Cotton Mills of South Carolina is receiving from the plant 35,000 spindles and the needed complementary machinery to round out its plant in that state. The Appleton Company of South Carolina is also receiving machinery from the Lowell branch of that company to the extent of about 30,000 spindles and the balance of the Appleton property will probably be sold. In Fitchburg where some 5,000 looms were operating in cotton mills a few years ago there are about 160 operating today. Russell B. Lowe, formerly with the Amoskeag Co., is equipping a mill in Fitchburg for the manufacture of rayon products.

The Naumkeag Company at Salem, Mass., manufacturers of the Pequot sheets and pillow cases, is entering upon the production of colored sheets and pillow cases following the lead of the Pepperell mills who have been successful in introducing colored sheets to the trade all over the country. It is operating about 75 per cent capacity.

The reduction of prices in ginghams last month varying from 1 cent to 2 cents a yard and which was expected to stimulate a larger consumption of the cloths has not brought much new business forward. A few years ago there were 75,000 gingham looms in profitable operation in this country. At the present time barely 12,000 looms are in operation and it is stated that they are being run at a loss in most instances. The demand for the cloth appears to have dwindled in much the same way that women's bleached petticoats have gone out of existence.

One of the singular facts in the Massachusetts wage situation is that mills outside of New Bedford and making similar goods are finding no difficulty in securing all the hely they require at reduced wage scales. They have not yet received any benefit in the way of larger orders traceable to the New Bedford strike but operatives from New Bedford who would not accept a wage reduction there have been quite willing to work at a reduction outside when they can secure places. This is not only true of mills located in Bristol County where New Bedford is situated but it is true of fine goods mills in the western part of the state.

Business has dropped considerably in fabric finishing in the past two or three weeks. Orders for new printings on cotton goods have been light and were it not for the wide use of rayon fabrics that require special finishing treatment for which many New England plants have been newly equipped the idleness among finishers would be so great that it is doubtful if more than 25 per cent of the capacity of the plants would be employed.

The bleacheries have been running very light and piece dyeing machinery has been idle for a longer period than has been true for many years. Increasing attention is being given by the finishers to fine drapery work and to glazed chintzes that are now very popular in the trade. There has been a substantial increase in the demand for fast colors in vat dyes but the proportion of this high priced work available is small compared with total dyeing capacity.

Owing to the general depression in the trade there has been much less advance purchasing of rayon or other chemical fibers for use in cottons and New England silk mills. Rayon manufacturers are taking orders for Summer delivery at old prices and are not disposed to make any price changes for the period. They feel that there would be no increase in business resulting from the price change as the delay in ordering is due to the hesitancy of converters and others in placing fabric business with the mills for another season. The many mills in the section that have been making fine rayon damasks and rayon curtain materials have been receiving less business this year than a year ago but the consumption of these goods has been expanding throughout the country and the current quiet is not considered indicative of a decline.

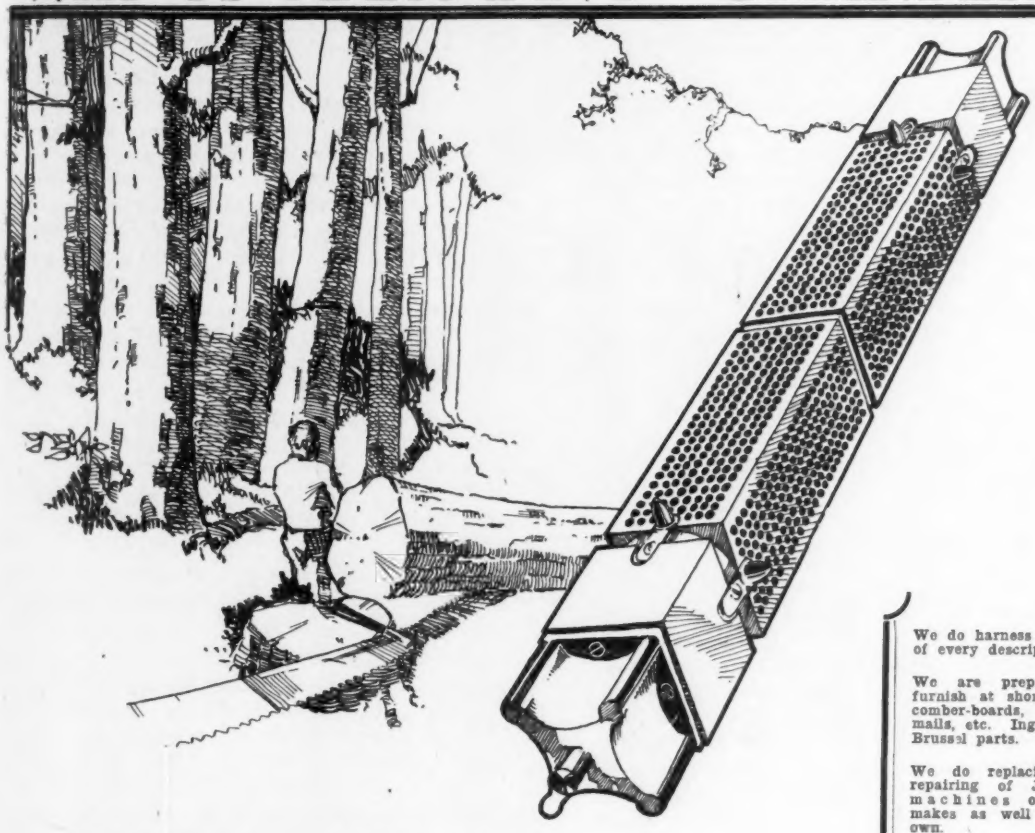
Cotton machinery manufacturers have been receiving very little new business despite the constant reports of additions to plants in the South. Considerable machinery has been shipped South from New England in the past few months and most of it has been in use but a few years.

Although there has been a very substantial contraction in the output of combed yarns due to the New Bedford strike that affected large spinning plants as well as weaving mills there has been no improvement in the volume of demand for combed yarns of the higher grades from mills outside of New Bedford. Prices are being held firm but stocks of yarns held when the New Bedford strike began have not decreased in any large way.

F. E. Wilson & Company Move.

F. E. Wilson & Co., yarn merchants have moved from 427 Drexel Building, Philadelphia, to the Philadelphia Bourse Bldg., 5th and Chestnut Sts.

WHY A MAHOGANY CYLINDER?



We do harness building of every description.

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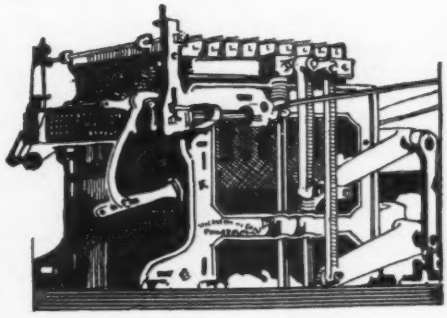
Immediate and expert attention our guarantee.

THE Halton Jacquard Machine is sturdy and rugged in its construction. Each part is made of the finest materials, designed especially to best fulfill its purpose.

All cylinders and needle boards are made from selected well seasoned mahogany. The cylinders are built up in sections and are partially hollow, thus obtaining a minimum of weight and possibility of shrinkage or warping.

When you buy a Jacquard Machine look into its construction—then you will buy a Halton.



THOMAS HALTON'S SONS

Mascher St., below Oxford

Philadelphia

Selling Agent
H. A. FORBES
P. O. Box 1663, Paterson, N. J.
Telephone Lambert 8592-W

Southern Representative
FRED H. WHITE
304-8 Independence Bldg.
Charlotte, N. C.

"USE A HALTON JACQUARD AND YOU USE THE BEST"

Cotton Comment

By H. and B. Beer.

New Orleans, June 16th, 1928.

Weather conditions throughout the cotton region during the past month, following the wet, cold Spring, were not altogether satisfactory, there being too much rain in districts of the eastern and western belts, especially in the central belt. As a result private crop accounts remain mostly unfavorable. The market, however, failed to respond to the unfavorable weather and generally unfavorable crop advices, probably owing to the want of speculative support, a less urgent demand for spots, due to mill curtailment, and because of light emergence of boll weevil to June 1st. In fact, values are somewhat lower than one month ago.

According to the latest of weekly weather and crop government reports, for week ending June 12th, progress of cotton was only fair in the Carolinas, and while plants are small and late in Georgia, there was considerable improvement in the crop. In Tennessee, Alabama and Mississippi progress of cotton was mainly poor to only fair, with some localities reporting good progress, and there were many complaints of lack of cultivation because of frequent showers. Rains in Arkansas improved conditions for growth in some sections but interfered with cultivation in others, while in Louisiana progress was only fair because of cool nights and wet soil. Growth was generally good in Oklahoma, and while the crop is late, the stands average good; chopping is well advanced. Moderate temperatures and rains in Texas were helpful but it is still too dry locally; chopping and cultivation are well advanced except in wet areas where these operations have been retarded; plants are squaring freely to the northeastern part of the state.

These returns denote that while the new crop is making fairly good progress in the Southwest and doing better in Georgia, the crop has not made much headway in other sections of the belt, particularly in the central belt and in Alabama. Meanwhile, since last Tuesday, instead of needed dry, warm weather, considerable rain fell over the major portion of the cotton region, especially in the central and eastern portions of the belt which will likely tend to delay cultivation all the more. A long period of hot, dry weather is essential to permit the crop to make better progress.

In view of the indicated moderate increase in this year's cotton acreage, probable loss of much fertilizer by washing rains in the central and eastern belts, and possible damage by boll weevil, the outlook at moment is for only a moderate crop at best, perhaps a smaller yield than may be required for next season unless there be a marked improvement in the crop outlook in the future.

The United States Department of Agriculture, Bureau of Agricultural Economics, estimates last year's world's production of lint cotton, compared with year before last, as follows:

Bales of 478 pounds net—Season 1927-28		1926-27
United States crop	12,955,000	17,977,000
Foreign crops	10,645,000	10,023,000
World crop	23,600,000	28 000,000

For nine months, or to the close of April, the Garside Bureau, Boston, estimated the world's consumption of American lint cotton at 12,197,000 bales against 11,642,000 for corresponding period last season, counting round as half bales, of which 1,175,000 bales were consumed during April versus 1,374,000 for April of last year, and expects a steady reduction in the excess of this season over last season during the remainder of the season.

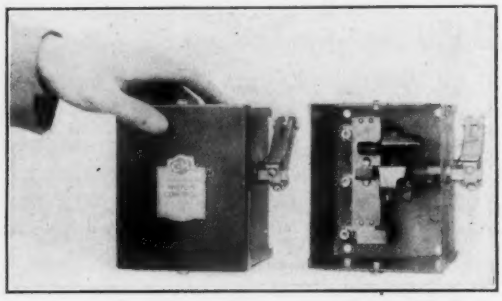
Because of the smaller supply of American, the larger supply of Indian cotton, and higher prices than at this time last year, it is natural for consumption of American to fall off during the remainder of this season compared with after this time last season, otherwise the indicated world's carry-over of American cotton, which promises to be less than 5,000,000 bales at the close of this season versus 7,238,000 last season, would be all the smaller.

With indications for a normal world's carry-over at the close of this season, July 31st next, there is evidently the need of a moderate yield of about 15,500,000 bales of lint cotton for next season's requirements, of which there is no assurance at present.

Furthermore, the growing crop was late in making a start and will likely be late in maturing. Mill stocks, especially in the United States are light, and stocks in the South are small, which features should prove sustaining features of the market, especially if the growing crop fails to improve materially in the future. Compared with last year the world's visible supply of American yesterday was 3,100,000 bales against 4,307,000, of other kinds 2,142,000 versus 1,712,000, and of all kinds 5,242,000 against 6,019,-000.

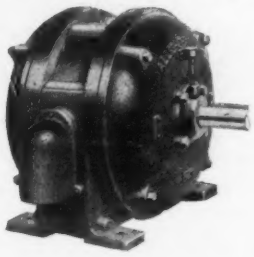
New Shipper Rod Operated Master Switch

A new switch designed especially for shipper rod operation has been announced by The Cutler-Hammer Mfg. Co., Milwaukee, Wis. It is for use as a pilot circuit control device on combers, twisters, reels, roving and spinning frames, and other machines to which shipper rod control is particularly adapted. The manufacturers point out that should the motor stop due to low voltage or any other reason, it will not re-start until the switch has been returned to the "off" position. The switch is designed for mounting



at the end of the machine and only the shipper rod runs the length of the machine. Moving the switch to the "on" position starts the motor; throwing the shipper rod in the opposite direction stops the motor. The operating lever can be placed in any one of four operating positions, to suit installation requirements. The switch is equipped with non-stubbing contacts, and shear pin to protect the mechanism. It can be used for either two or three wire control on pilot circuits up to 550 volts. A heavy pressed steel, dust-proof enclosing case, arranged for conduit wiring, protects the switch.

TEXACO—"For Dependable and Economical Lubrication"—TEXACO



Oiling them *Regularly* is *NOT* enough!

While it is true that all electric motors used in the Textile industry are designed to lubricate their wearing surfaces automatically, too many of us are inclined to take their effective lubrication for granted.

Not that the necessity for lubrication isn't appreciated by most operators—but often it is felt that this involves only the addition of "some oil" now and then.

This is a mistake; and in the Textile industry especially, where the electric motor is exposed to dust, dirt and cotton refuse, is a serious mistake.

And, conditions being what they are, it is absolutely necessary (in securing efficient and economical operation) that attention be given to the construction of the bearings involved, the types of lubricants best suited, and the extent to which parts should be cleaned and fresh oils and greases applied.

Abuse or neglect will be certain to result in abnormal power consumption and high production costs, and one of the surest ways to avoid trouble is to use lubricants which are best suited for the conditions prevailing.

These lubricants, The Texas Company is in position to offer you: TEXACO oils and greases which have been carefully prepared and tested—and proven to be uniformly dependable.

In fact, TEXACO lubricants for electric motors are used in many of the most efficiently operated textile mills in the country today—and throughout the world.

We shall be glad at all times, to answer any question relating to the use and most economical application of electric motor lubricants (or any other lubricants); and we would thank you to address inquiries to the address below.

Our exceptional delivery facilities assure the prompt handling of any order, no matter how small or how large, anywhere and everywhere.

TEXACO

TEXTILE LUBRICANTS

THE TEXAS COMPANY

Texaco Petroleum Products

Dept. C7, 17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

E. E. ROUTH has been made manager of sales of the Mathieson Alkali Works, Inc., with headquarters in New York City. He has been with the company for thirty years, with the exception of four years spent in college. Since 1920 he has been southern sales manager in charge of the Charlotte, N. C., office. Fred O. Tilson, who has been representing the company in the Southwest, has been made southern district sales manager, succeeding Mr. Routh, with headquarters in Charlotte. Mr. Tilson is a native of Western North Carolina, and attended Yale University. Following the War, he was foreign purchasing agent for the W. H. Marvin Co., of Ohio, and spent four years in Greece for this concern. For the past four years he has been located in Dallas, Texas, with the Mathieson Alkali orks.

Left, E. E. Routh, who has become manager of sales of Mathieson Alkali Works, in New York City, and right, F. O. Tilson, who succeeds Mr. Routh.

ROSCOE O. ROBERTS has been named general superintendent of the ten mills being erected by the Alabama Mills Company, in Alabama, with headquarters in Birmingham. Paul A. Redmond is executive vice-president. For several years Mr. Roberts has been assistant general manager of the C. R. Miller Mfg. Company plants in Dallas, McKinney and Waco, Texas.

HUGH S. CLARKE, superintendent, Miller Cotton Mills, Waco, Texas, has been promoted to general superintendent of the C. R. Miller Mfg. Company's three plants, at Dallas, McKinney and Waco.

H. BURTON TAYLOR, for many years superintendent of the cotton department of Pacific Mills, Lawrence, Mass., has succeeded William R. Tattersall as general superintendent of the four plants of the Chadwick-Hoskins Company, Charlotte, N. C.

A. E. JURY has been made acting agent of the Winnsboro Mills, Winnsboro, S. C. He has for twelve years been in charge of textile development of the U. S. Rubber Company, and will continue in charge of that work in addition to his duties at Winnsboro. The U. S. Rubber Company recently resumed operation control of the Winnsboro Mills, which for several years have been operated for the company by Lockwood, Greene & Co., Managers.

HOWARD O. CHAPMAN has succeeded Joseph Frei as superintendent of the Utica Steam Cotton Mill, Utica, N. Y., who resigned after 59 years of continuous service with the company.

ALFRED A. JEPSON has been promoted from superintendent to general manager of the Savona Mfg. Co., Charlotte, N. C., and William A. Beadle has been re-instated as treasurer. C. C. Lima, Jr., vice-president, has resigned, while C. C. Lima, Sr., continues as president.

PHILIPP MOLL, formerly sales manager of C. H. Boehringer Sohn, Hamburg and Nieder-Ingelheim on Rhine, and more recently vice-president and sales manager of Dissosway Chemical Co., has become associated with the Roessler & Hasslacher Chemical Co., New York City, as assistant to the manager of sales.

ROBERT C. HOLT, of Stafford & Holt, Little Falls, N. Y., died on Friday, June 1st.

A. MEIKLE, superintendent of the F. W. Poe Mfg. Co., Greenville, S. C., has resigned, and has been succeeded by A. B. Adkins, formerly connected with the Alice Mfg. Co., Easley, S. C.

L. L. CHANDLER has accepted a position as overseer of spinning at the Borden Mills, Kingsport, Tenn. He has held a similar position at the Judson Mills, Greenville, S. C., for many years. He is succeeded at Greenville by Lee Hughes.

WILLIAM JOHNSON, manager, Johnson Machine Works, Paterson, N. J., manufacturers of the Johnson warp-sizing machine, is in Europe in the interets of the firm's foreign business.

W. E. EVANS has tendered his resignation with Industrial Cotton Mills Co., Rock Hill, S. C., to become manager of the United Circulation Co., Atlanta, Ga.

C. A. GRANGER has been made superintendent of the Monaghan plant of Victor-Monaghan Co., Greenville, S. C.

W. E. CRENSHAW, formerly connected with the Boger & Crawford Spinning Mills, Lincolnton, N. C., has become superintendent of the Melville Spinning Co., Lincolnton, N. C.

ELLIS T. GURRY has resigned as manager of the Morrilton Cotton Mills, Morrilton, Ark.

ROBERT T. GRANT has become southern manager for the Chemical and Dye Corp., Springfield, N. J. Mr. Grant has been handling dyestuffs and chemicals for the mills for a number of years. He has opened an office in the Old Law Building, Charlotte, N. C., which is equipped with a laboratory for service.

E. T. TURNER has become overseer of weaving at the Shelbyville Cotton Mills, Shelbyville, Tenn. He was formerly at the Maginnis Cotton Mills, New Orleans, La.

JOHN S. STROWD, who was recently succeeded as superintendent of the Erwin Cotton Mills, Cooleemee, N. C., by Carl R. Harris, died on June 1st at his home in Cooleemee. He had held this position for twelve years, being forced to retire recently on account of declining health. He was 46 years of age and is survived by his wife, three children, three brothers and one sister.

OTTO A. BELGER, president, The Belger Co., Inc., Newton, Mass., manufacturers of the Belger continuous card cleaner, recently returned from Europe, where he inspected the progress of his equipment as made by the foreign licensees, and investigated manufacturing rights for an improved type comber and a long draft spinningsystem.

Rayon comes into its own!

Effects in color and line made possible *only by rayon*

TO explain the popularity of the newest of textiles, its acceptance in discriminating homes and carefully planned wardrobes, it is necessary to understand the unique qualities of the new and finer rayon as developed by du Pont.

Rayon is no usurper in the textile field, no imitator of other textiles. On its own merits, its own contributions to the mode, its new effects in color and line, its unusual softness and subdued lustre, its greater strength and durability, it achieved acceptance overnight.

The use of rayon is limited to no single field. As a new textile it has its uses throughout the entire length of the textile industry. Du Pont Super-Extra Rayon—unusually soft, combining strength and durability with subdued lustre, is ideally suited to the requirements of American weavers.

There are requirements of your business today which only rayon can fill. And to be sure that you are getting the new and finer rayon see that it is made by du Pont. Textile manufacturers of importance practically without exception are users of du Pont Super-Extra Rayon.

Du Pont *Super-Extra Rayon*

DU PONT RAYON
REG. U. S. PAT. OFFICE

Du Pont Super-Extra Yarns are *truly* multi-filament	
Denier	*Filaments*
65	26
80	30
100	40
125	50
150	60
170	60
200	80

DU PONT CHEMICAL CONTROL ASSURES DU PONT QUALITY

Southern Textile Association.

(*Continued from page* 902.)

and new uses section of the Institute had done in this direction since its formation.

George H. Emery, secretary, North Carolina Association of Certified Public Accountants, of Statesville, N. C., was the final speaker of the session. Mr. Emery discussed

The Value of Records.

and his remarks concerning the requisites of adequate records in the cotton mill follow in part:

"The problem of costs in a cotton mill resolves itself into the determination of the proper allocation of the manufacturing outlays for any specified period to the exact production made during the same period, together with a comparison with the predetermined cost figures, in order to show the variances between the actual and the normal expected performances.

"When we speak of standard costs, we do not mean ideal costs, but normal costs, based upon normal production and normal expenditures under normal conditions. Such records provide a measuring unit with which to compare actual performances. They should be set up to meet the conditions existing in the individual mill. If a mill operates normally at 85 per cent of its capacity for 60 hours per week, its standards should be set up to conform to this, its normal, operating condition.

"In the establishment of standards in a cotton mill, the first standard to be set up is the normal production standard, which would reflect the normal output to be made by each unit of the equipment when running on any given size or kind of product. In the spinning room this would show the pounds per spindle per week on each different yarn number. In the weave room, it would be the yards per loom per week on each different cloth construction. And similarly for the carding, warping, winding, slashing, finishing and other operations.

"Next the direct labor cost for those actually engaged on the producing equipment will be standardized; that is, a quota for the operation of the equipment for any one process will be set up. By dividing this quota or standard labor cost by the normal production, the normal labor cost per unit will be established.

"The normal operating expense, or overhead of the mill will next be considered. This should first be set up on a budget basis for a definite period, six months or a year, and so apportioned that each operating department of the mill will receive its proper allocation of the expense. The departmental operating expense will then be reduced to normal expense rates for each producing unit, in terms of spindle hours, loom hours, etc.

"The actual operating expense will, when collected in a similar manner and compared to the normal expenses, clearly indicate the variations between the actual and normal, and show the control being exercised over the expense items.

"The cost of material is subject to continual fluctuation due to the daily market quotations on the cotton exchanges. But it would appear to be a fair proposition to establish a standard cost per pound on cotton based upon experience over a period of time, and thus reflect in the cotton account the gain or loss on cotton due to such changes. The amount of material entering into the production of any specified article is a relatively constant factor, and a standard weight can be set up. A standard for waste in material can be established, based upon particular experience in any mill.

"When the actual production of any operation is recorded, it will be calculated at standard material, labor and expense rates, for each class of article being made, and the total of all the calculations for each article will show the normal cost of the product of that operation. This compared with the actual cost of the same operation, similarly compiled to show material, labor and expense, will show the variation of the cost of that operation from the normal. An analysis of this variation will indicate the causes for the variation, which will enable the superintendent or overseer to eliminate any detrimental causes. Of course, it should be borne in mind that all causes of variations are not detrimental, some being the reverse.

"Men have been contracting to do work from the dawn of history until the present day. No man was ever asked to take a specified job who did not first figure out in his mind how much it would cost him to do it, compared with the price offered for it, in order that he might know whether it would be to his advantage to accept it. Such figuring was crude, but it served in its day, when the margin of profit was large. But in this day of keen competition and narrow margins, such methods only invite disaster, something better is needed.

"With a system of normal or standard costs, with records available showing how much of any specified size or kind of product can be put through the plant, how much expense and direct labor it would require, and knowing the market or replacement cost of the material, the mill executive can figure accurately what should be the cost of the order before he accepts it. And with the actual production and cost figures compiled weekly on the cost comparison record, he can control the order through the mill, and thus be sure that the expected profit is realized.

"You have no doubt heard of the engineering report of 'Waste in Industry' compiled under the direction of Secretary Hoover. This report showed that avoidable wastes in six basic industries, of which the textile industry is one, on account of bad management was 50 per cent. That means that practically one half of the time, money and effort put into their operation is wasted. When we consider that the factories of the country annually produce sixty billions of dollars worth of goods, we can see how appalling such waste is.

"The responsibility for this waste has been placed at the door of the following groups; management, 50 per cent of the waste; labor, 25 per cent of the waste; public relations, cancellations and like causes, 25 per cent of the waste. From these figures, we, in the management division, can see where our opportunity lies.

"By means of carefully planned cost and production records, comparing our actual performances with the normal standards of our individual mills, we will be enabled to control many of the causes which lead to such wastes."

After Mr. Emery's address, the Association went into business session. The first feature was the report of the secretary, J. M. Gregg, which showed a remarkable activity and accomplishment of the Association along many lines during the past year. The audit of the treasurer's report indicated a healthy financial condition. The officers named earlier in this story were elected.

Two happy features of this session were the presentation of the president's medal to Retiring President Gilbert, made for the Association by J. A. Greer; and the presentation of the S. B. Alexander Medal, to Marshall Dilling, as the member of the Association having done the most for the advancement of the industry. This presentation was made by J. A. Chapman, Jr. Mr. Dilling is the second man to receive this medal, offered each year by Mr. Alexander for the purpose indicated. The first recipient was F. Gordon Cobb.

Arkwright medals were presented to fourteen members whose tests had been approved. The names of these men will be found upon page 902 of this issue.

It was announced that the Fall meeting of the convention will be held on Friday, October 19th, at Greenville, S. C., during the week of the Southern Textile Exposition, to be held there October 15th to 20th inclusive. The convention then adjourned.

Trouble Shootin'

When mill production slows down and tie-ups begin to cut into profits, it may be that part of the trouble, at least, is due to old fashioned, inefficient methods of cleaning bobbins.

Termaco Roving Bobbin Cleaners not only insure a steady flow of perfectly cleaned, smooth, uncut bobbins, but also eliminate the need of reworking roving waste.

Roving waste is carded off, not cut off. Every bit of the waste is removed. It is ready for mixing with raw cotton stocks without further attention!

Equally important, Termacos take the burden of bobbin cleaning off the spinners and allow them to give their undivided attention to keeping ends up. Roving waste can be controlled at all times and excessive waste traced directly to the person responsible.

Termacos speed up production, prolong the life of bobbins, and cut labor costs.

Write for full data.

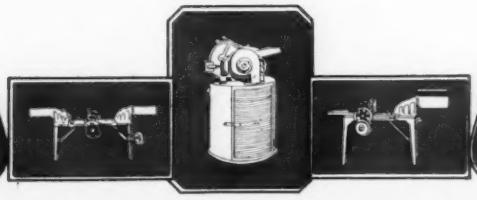
The TERRELL MACHINE CO., Inc.

Mfrs. Termaco, Utsman, Type K, Etc., Machines.

Charlotte, N. C.

General Supply Co., Danielson, Conn.

N. Y. and N. E. Representative



Testing U S Better Bobbins at 7500 R. P. M.

This young lady is only one of the many inspectors in our factories who do nothing but test U S Better Bobbins for true running on customers' spindles at 7500 r.p.m. Skilled sensitive fingers eliminate the bobbins on which you, nor no one else can spin good yarn.

Run of the lathe, untested and uninspected bobbins can always be bought for less money than U S prices, but ask yourself or ask your spinner how much you save? Good bobbins play a more important part in good yarn making than the average mill man will take the time to realize. Not so, however, with the best mills. That is the reason so many of them are U S equipped.

Investigate your bobbin situation and make out your next order to U S.

P. S. Warp Filling Wind Bobbins, and Automatic Loom Quills or regular Filling Bobbins for rayon, are specialties with U S.

U S BOBBIN & SHUTTLE CO.

PROVIDENCE, R. I.

GREENVILLE, S. C. PHILADELPHIA, PA. HIGH POINT, N. C. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

U S salesmen are specialists on bobbins, spools and shuttles. Order direct from U S for real helpful and understanding service

AN OLD TIMER SAYS

In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

Saturday Afternoon in a Prominent Southern Town.

"Hey, there! Old-Timer!"

"Well, dog-gone, if it isn't my old friend Jim! How's tricks, old boy?"

"Fine, Old Timer, how's everything with you?"

"Well, I guess it could be worse, Jim, but it would have to be pretty bad if it was."

"What in the dickens are you doing in this neck of the woods, Old-Timer? Didn't think you could get this far away from home. You know, when a fellow gets as old as you are, Old-Timer, he generally hangs around pretty close."

"That's all right, Jim. I'm not much older than you are in years, and a darn sight younger in my feelings and the way I work."

"Yea, more bull. Well, if you feel so all-fired young, come on home with me and look over my mill next week. We are getting a production that we are not a bit ashamed of, and maybe we can show you a thing or two that you can take back home with you."

"That's all right, Jim. I'm fully aware of the fact that I can always learn something by looking through the other fellow's mill, even if it is one that is not running any better than yours was last time I saw it."

"Hold on, now, Old-Timer. I don't call that bull at all —that's just pure low-down *****!"

"Now, let's not have a scrap here on the street, Jim, and I can't go home with you today, either, but if nothing happens to prevent, I'll get a gallon of gas, pump up the tires and drive over to see you one day next week."

"Good enough, Old-Timer, what day?"

"Oh, about Wednesday, I guess."

"All right, I'll tell the good lady to have a mess of new beans and Irish potatoes for you. So long, till Wednesday."

Wednesday, 6:30 A. M.

"Well, for the love of Mike, what time did you leave home anyway, Old Timer? I told all the men you would be here today, but gosh! I didn't expect you before starting time."

"Well, being as I was coming, Jim, I just thought I might as well made a day of it and I wanted to see you start up anyway."

"All right, put out that stinking old corn cob pipe and let's go . . Say, why don't you get a fresh pipe about every so often, Old Timer? I understand they sell about six for a quarter, anyway . . . . ."

In the Slasher Room.

"Got your slashers looking nice, Jim. Just painted all the heads, haven't you? I don't see any leaky steam pipes, either. In fact I don't even see any water leaking out around your cylinder bearings. Don't suppose you have that packing in the journals too tight, have you? You know, that is an easy way to stretch your yarn and not know it—that is, on cylinders that do not have positive drive."

THIS month "Old-Timer" tells of another visit to Jim's mill. He discusses a number of "kinks", and will be glad to send sketches and further descriptive information concerning any of them to readers who request him to do so. We hope shortly to continue his report of the present visit; he ought to have a lot to say when he gets into Jim's weave room.—The Editor.

"No, Old-Timer, I've just inspected all four of my slashers by taking the yarn off of the cylinders and turning them to see that they turn easily. Then I set the date down so I will know to do that again in about three months."

"That's fine, Jim. Always keep a record of things so you will have a system."

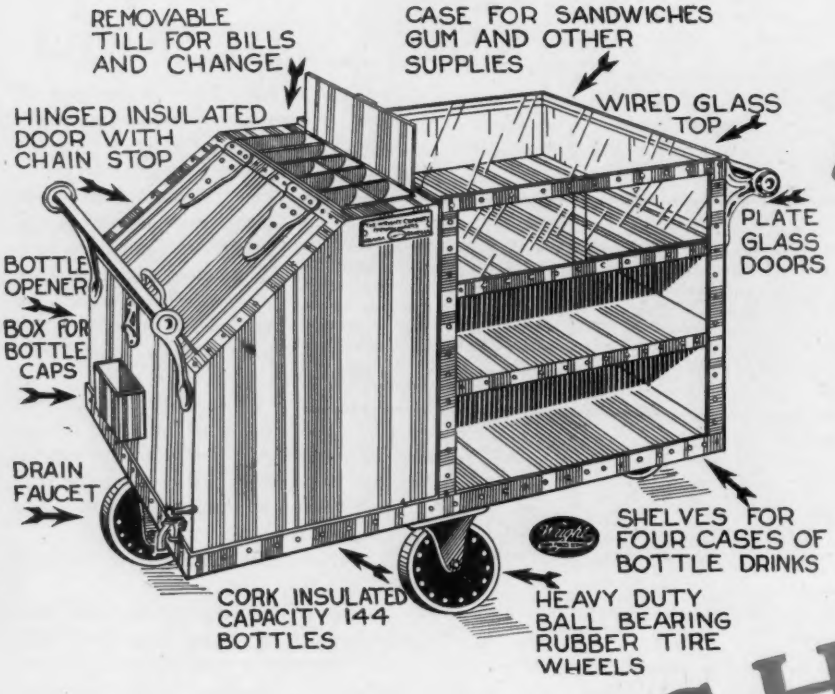
"How do you like my doffing arrangement, Old-Timer? I noticed that sometimes one man would be ready to doff, and the slasher man next to him was cutting a lap and could not come to help right then, therefore, he would have to call the man from one of the other slashers, so I ordered this chain and round iron rod and fastened them to the ceiling with an adjustable turn buckle and a hook on each chain. Now, when the man is ready to doff he merely places the hooks on the loom beam gudgeons and lets the beam swing out of the way and hang there until he puts in his empty beam and get the slashers running. Along comes the beam roller, who slips his truck under the swinging beam and is gone to the tie-in room. It saves a little time, makes the doffing easier because they do not have to lift the beam, and saves calling the other slasher man to help. (I will be glad to send a sketch of this arrangement to any reader who will request it.)

Serve Refreshments the "Wright" Way!

If you stop to consider the profits lost by employees strolling to and from a concession stand, you will serve refreshments the "Wright" way. This unique invention is worked out to the most minute detail, so that mill hands may be served *quickly* and practically—right at their machines.

Send for the bulletin describing Wright's Cold Drink and Food Cart. It tells you how to save money—as it has done for numbers of others.

The Wright Co., Inc., 479-81 Whitehall St., Atlanta, Ga.


REMOVABLE TILL FOR BILLS AND CHANGE
CASE FOR SANDWICHES GUM AND OTHER SUPPLIES
WIRED GLASS TOP
HINGED INSULATED DOOR WITH CHAIN STOP
PLATE GLASS DOORS
BOTTLE OPENER
BOX FOR BOTTLE CAPS
DRAIN FAUCET
SHELVES FOR FOUR CASES OF BOTTLE DRINKS
CORK INSULATED CAPACITY 144 BOTTLES
HEAVY DUTY BALL BEARING RUBBER TIRE WHEELS

The Wright Cart is only 22 inches wide by 5 feet long—easily handled in any mill. Handsomely built of rust-proof metal. Carries a surprisingly large stock. The price will interest you.

Upon your request we can send you a list of Wright users who have incidentally recommended the Cart very highly.

WRIGHT'S COLD DRINK and FOOD CART

"Here's another little thing that is not a bad idea, Old-Timer. You see, I have all the weight levers on my press rollers set so the slasher man cannot put the press roller against the yarn on the loom beam until the beam has about 125 yards of yarn on it. If you press the yarn too tight on the small beam it will make the weaving run badly. I found that out by changing a style of goods once. I tied on 24 warps in one day on a weaver's looms, and he told me a few days afterwards that his looms were running better than they had run in a long time. Then in about three weeks I was passing by his looms and noticed he had seven of them stopped at one time, and I thought I would kid him about telling me they were running so well, but before I got to him, he came to me and said his looms were about to work him to death. Well, the warps all ran out in the next day or two, and I noticed he was again standing at the end of his alley watching them run. That gave me the idea, and I watched him again when his warps began to run low. The same thing happened, but it was not so pronounced as the first time, because the warps were getting somewhat broken up as to size. That's why I fixed all

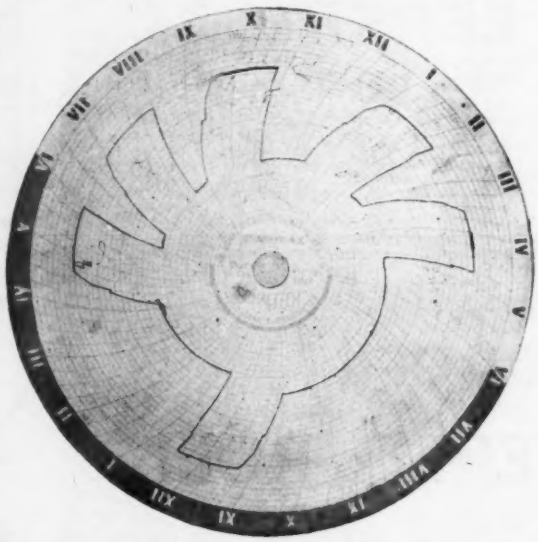


Fig. 1. Showing the chart from Jim's size kettle. It was impossible to secure a clear reproduction, but the curve showing the regularity in the cooking time on each kettle is easily followed.

my slashers so the men could not run a tight warp until enough yarn was on the beam to form a cushion."

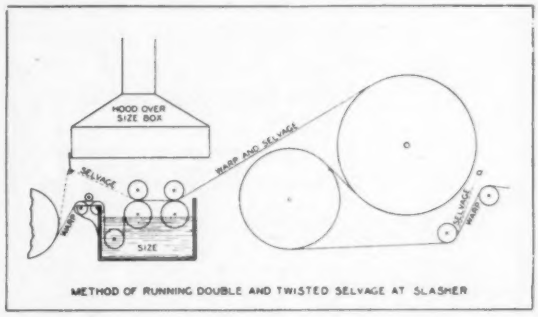
"Say, Jim, what's that crooked little pipe doing on the steam line going to your cooking kettles?"

"There goes your old eagle eye again. I didn't expect you to notice that, Old-Timer, and to be frank, I didn't intend to mention it this time. But, anyway, we found that we got a much better size by bringing it up to a boil very slowly. That is, we would just crack the steam valve open a little and let it take about twenty minutes for the size to get thoroughly mixed and up to a temperature ready to cook. Then open the steam valves and let her go."

"But what's that got to do with the little steam pipe, Jim?"

"Just hold your horses and I will tell you. We realized that the size man who does the cooking could not or would not crack the valve just the same every time. Therefore, we put that little 3/8-inch pipe around the main valve as a by-pass. He opens the 3/8-inch valve wide open for the length of time—in our case twenty minutes—he wants to raise the temperature slowly; then he opens the big valve and closes the little 3/8-inch valve. In this way we get all of them the same. Look at one of these recording charts and you will see that regularity I am speaking of."

Picking up the chart I am showing as Fig. 1, Jim continued, "There, you see he cooked five kettles from 4:30 a.m. to 4:30 p.m., and one kettle about 11:00 o'clock at night for the night work. Please note that there is not more than ten minutes variation in any of the cooking time of all six kettles. And when you realize that this chart was not made as a sample but merely selected from the regular day's work, you will have to admit it is pretty good."



METHOD OF RUNNING DOUBLE AND TWISTED SELVAGE AT SLASHER

"I see you have recording charts on all your cooking kettles and automatic regulators on your size boxes, Jim. The natural question is: why don't you install the steam regulators on your cylinders? Don't you think that is a good thing, too?"

"Sure I do, but I just believe someone will simplify the cylinder regulators and also make something that is not quite so expensive."

"Say, Jim, wait a minute! What is that slasher man doing with that friction and piece of rope?"

"He's putting that rope in the friction instead of paying $5.00 for one of the regular rubber frictions."

"Well, how does it work?"

"Oh, it's all right, I guess. We haven't bought a rubber friction in a long time, and you see the slashers are all running."

"Well, what kind of a contraption is this?"

"I'll have a man come and show you, then you can see better than I would be able to explain . . . Hey, George, get a loom beam and put it on the rack so you can show this man how you use the rack. . .

"Our mill has been running several years, as you know, Old Timer, and our loom beams were getting in pretty bad shape. Many of the bolts have been tightened several times until some of them have broken out the wood on the barrel where the nut fits in the slot. This of course lets the beam heads get out of true and the yarn on the beam has a high side and a low side which makes bad weaving. We take the beams to the shop and have a groove cut in the barrel all the way across so we can run iron rods the length of the beam, through both beam heads with nuts and lock washers on the outside. This enables the man to put the beam up on this rack and true the heads perfectly and the iron rods will hold them true. We also take the op-

(*Continued on page* 1003.)

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Difficulty in Securing an Even Shade.

EDITOR COTTON:

I have a problem on dyeing which I would like to submit to the readers of your discussion department.

I am dyeing yarn tan on a package dyeing machine of the pressure type, using the following formula: 10 ounces of tan dye to 56 pounds of thread and 5 pounds of common salt. I put the yarn, which is run on springs, in the kettle then fill with water and bring to a boil, then I have the dye thoroughly dissolved in half a bucket of warm water and pour it in the dye pot and boil for one hour. Then I pour in the salt, which has previously been dissolved in water. This is poured in slowly and the water is not boiling when the salt is added. Then I keep the water hot, but below the boiling point, for 30 minutes, then have the yarn rinsed with clear water and put in the wringer for 10 minutes. Then I put it in the dryer for four hours with a temperature of about 200 degrees F.

My difficulty is that I cannot get my dyes to match, some are dark, some light and some of the yarn has a bright look, while some of it has a dull cast to it. Any information as to how I might remedy this will be sincerely appreciated.

Y. B. (GA.)

The Effect of Moisture in Waste Calculations.

EDITOR COTTON:

I have a question concerning the effect of moisture content in waste calculations which I would like to submit to the readers of COTTON:

Cotton as received and paid for contains an unknown percentage of moisture. This percentage of moisture in cotton as received probably varies with the atmospheric condition and the source of the cotton. Between the time cotton is received and the time cotton is put into process, the moisture content of the raw cotton changes.

I would like to be informed as to whether I am correct in these conclusions. If so, should waste percentage for production purposes be calculated on the gross received weight of the raw cotton which is put into process, or on the gross weight of raw cotton at the time the cotton is actually put into process? What is the average normal moisture content of raw cotton? Moisture must have some effect on the percentage of waste which results from manufacturing. Cotton which contains varying percentages of moisture is put through humidifying processes which bring the regain on the goods to a uniform figure. If the percentage of moisture in the raw cotton is less than that in the finished goods, the apparent percentage of waste is decreased. If the percentage of moisture in cotton exceeds that in the finished goods, the waste is increased.

Is the effect of the varying moisture content in cotton, which is put into process and in goods which are finished, a factor which should be considered in calculating the percentage of waste for production or cost purposes? Is it practicable to make adjustments so that the effect of the varying moisture content may be eliminated?

I certainly will appreciate any information which the readers of COTTON may furnish along the lines of the foregoing questions.

CONTRIBUTOR NO. 4032.

Overcoming Twisting in the Selvage.

EDITOR COTTON:

This is in response to "Contributor No. 3024" regarding his difficulty of the two ends of selvage twisting on a sheeting with 16 ends in the selvage, reeded four in a dent. I would like to offer the following suggestions:

When he starts his warp on the slasher, let him be sure to thin out the yarn on the beginning and end of the counting in of ends; that is, he may be putting in four or six ends in the dent of the slasher comb, then he should start with say two or even one, if it is 2-ply, and then finish the same on the other selvage.

You see, if the ends are crowded, the drawing-in hand takes the first thread; after a while this end that was taken as the first, becomes the third or fourth, or even further in on the beam than that, then of course the outside ends become crossed, and they do the same again and again until it is a twist. It is just the same as if he put a narrow section beam in front of a wider one. This will always cause the outside ends to twist, but I am taking it for granted that he does not do that. C. M. (ALA.)

EDITOR COTTON:

I note the problem "Contributor No. 3024" is having with the two outside ends on the selvage twisting and making a bad selvage on his sheeting. It happens that I have had some contact with this trouble on this and other constructions, and maybe I can make some suggestions of help on the basis of our experience here. I might say in passing that too much tension on the shuttle could cause it.

The most probable cause, however, is that, in my opinion, judging from the description of his trouble, he very likely is picking off the wrong thread. If the slack thread is the one on the outside, this trouble could result. All of

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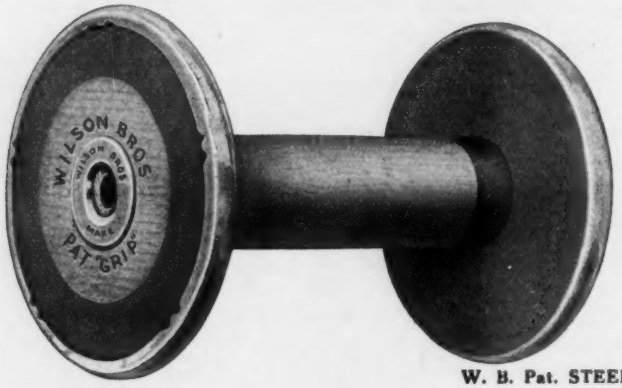

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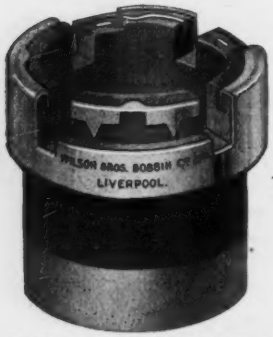

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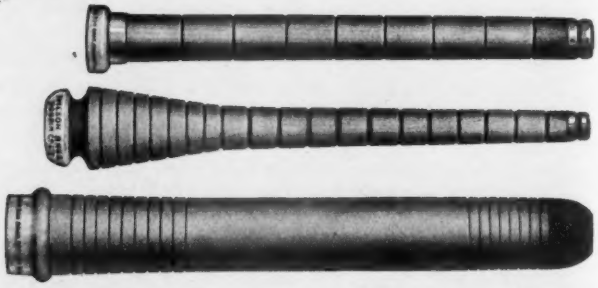

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the time I have been around the mill, I have known as a weave room rule: to pick over the back harness from the right hand side of the loom, but it was a long time before I knew the reason for it. "Contributor No. 3024" says if he breaks out one end the selvage will be all right, which reminds me of the experience I had which explained this rule to me. I was working in the weave room, and passed a loom that was making a lot of loose selvages, and I called the weaver, who happened to be a woman, and told her I was going to tighten up on it a bit. She said, "Well, if I break out this thread it will stop that trouble," and it occurred to me why the rule I mentioned was established. I have seen a lot of sleazy selvage made wholly because of a failure to observe that rule. I suggest that you tell this man to make his shuttle pick over the tight or bottom shed, and then I would be interested to know how he comes out with his trouble—pick over the back harness from the right hand side of the loom, and then pick over the front harness on the return traverse of the shuttle.

CONTRIBUTOR No. 3025.

EDITOR COTTON:

In a recent issue of COTTON, "Contributor No. 3024" outlined a difficulty he is having with selvage twisting on regular sheetings. He said he puts 16 ends in the selvage, reeding them four in a dent. The two outside ends of the selvage twist. If he takes these two ends out, he said the next two will twist.

The best answer I can give to this problem is to see that the harness and whip roll are adjusted properly. If this fails to stop the trouble, the outside ends should be tied off to the side about one inch from the rest of the work. We have found this to be satisfactory in difficulties of this kind. T. T. (GA.)

Humidity in the Spinning Room.

EDITOR COTTON:

In the March number of COTTON "Contributor No. 983" states how, without humidification, he was able to keep his frames in operation with the work going as good as the rest of his departments which had humidifiers.

I should like to know how his breaking strength in this department compared with the breaking strength of yarns from his other departments. I know that the most desirable temperature and amount of humidity for satisfactory spinning, will differ with different mills.

"Contributor No. 983" states that he keeps the room at about 86 degrees, and as he goes around he can tell how his work is going. I agree with him that when no humidifiers are used, the heat from the steam pipes kills the electricity. My experience in running a spinning room is, that if anything went wrong with the humidifying system, I would run a higher temperature to keep the frames and work running well.

I would recommend that this contributor get humidifiers, as the correct amount of humidity in the atmosphere lubricates the ring and helps the traveler in its work. The warm atmosphere allows the shafts, rollers and all parts of the machinery to run smoothly and requires less power.

It is necessary that the spinning room be kept sufficiently warm and humid, with the air as fresh as is possible, to allow the operatives to do their work as comfortably as

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possible. Proper systems of humidification cleanse and cool the air, and will absorb a certain amount of soluble gasses. During an excessive dry heat the operatives become listless and belts are found to have less gripping power, and spinning rooms with insufficient humidity have, in my experience, been the cause of unnecessary end breakages, and weak yarn has been made.

I would recommend that "Contributor No. 983" run end breakage tests in both spinning rooms and the tests to show the number of end down per thousand spindles per hour. This would give him a good comparative test of both methods. I have found good results on regular standard warp twist yarns, with a temperature of 70 to 80 degrees F. with a relative humidity of 43 to 46 per cent. On hard twisted yarns running twist multiples of 5.50 to 5.75, I have run my work with good results at 80 degrees temperature and 70 degrees on the wet bulb with a relative humidity of 55 per cent.

I would like to hear how this contributor finds his yarn varying in breaking strength in the room with humidifiers and the steam-heated room without the humidifying system.

CONTRIBUTOR NO. 4026.

EDITOR COTTON:

I have read the article by "Contributor No. 983" which appeared in the March issue of COTTON, on humidity in the spinning room. I don't doubt that he got away with it without humidifiers, but the odds were against him at all times. There is no denying the fact that with the proper humidifiers there is a considerable difference in the running of any room. As to the steam pipes that "Contributor 983" speaks of, we have them in our card room when the regular humidity cannot take care of the static; we turn on the steam, which flows a stream of steam and not so much water. It is true that when there is plenty of moisture there is practically no static or electricity in the machines.

When the machinery is kept warm and the moisture content up to a certain standard, that is under average conditions, and for numbers around 20s to 30s warp, etc., the relative humidity should be maintained at about 56 per cent relative humidity, depending upon the local conditions. Working under this condition it is no strain on the overseer, who, at his best, cannot keep track of what is needed as can a humidifier control. It works while the overseer is attending to other duties.

"Contributor No. 983" says that he keeps his room around 86 degrees of heat. I think if he will drop it down to about 70 degrees, he will have a much better running room. For 86 degrees is too hot to be pleasant for his spinners. Cotton does not require that much warmth in its manufacture. Just think of the temperature in which it grows and matures. As a general rule it does not run that high.

To run at the best temperature, the cotton has to be run at its natural state. We can "humor" it at certain stages, but we have to be very careful not to "over-humor" it. Taking a chance at a steam pipe, with its hot and dry "humor", we are playing with the nature of cotton, together with taking chances with the outside conditions of the atmosphere, which varies as fast as the winds. I have run without humidifiers, but the mill paid the cost, and they did not know it, neither did I, until since having the humidity to regulate and to test out for its quality and what it really meant to the weights and to the mill what it really meant in weights.

CONTRIBUTOR NO. 4030.

Making Evener Yarns.

EDITOR COTTON:

May I offer a few suggestions as to whether we should follow the principles laid down by our predecessors, regarding the manufacture of even yarns.

During my experience as a textile man, I have noticed in most places where I have received my training, that practically the same problems confront everyone regarding this subject. Also, I have noticed that there is a strange desire to follow hard and fast rules (established for standards) which have been given us in the early history of the cotton industry.

I agree in many cases, with our parental guides, for most of the principles apply very nicely and produce results that are very acceptable in the making of good, smooth, even yarns, but in other cases it would be better if we should lean upon our own principles, for quite often I have found that these hand-downs are abused, as there are those who try to apply them to all classes and grades of material used. This, I am sure, is working in the wrong direction.

A great many of the manufacturing problems may be traced back to the design of the machines which are placed within our mills, built with a sameness, so to speak, and with such a varied quantity of cotton and grades of yarn required, that to me, it seems a tremendous problem to overcome where a certain result is expected, and that too, without a complete renovation of the machine. This probably accounts for a great deal of the poor uneven yarn that is shipped from a great many mills. If, for instance, we take an opener picker or bale breaker and start in with the process of opening American cotton, the results obtained from such cotton through this machine would be entirely different from the results obtained if Egyptian cotton was used, yet, in many instances, the same machine is used with the same adjustments, etc., and in many cases there are no adjustments upon this machine to open Egyptian cotton equally as well as it would open American cotton. This, of course, shows a handicap which is placed upon a man in charge where his orders read: "Yarn to equal that of a competitor."

Then, also, there enters in the exactness of the managing minds as to quantity or amounts of production of one grade of cotton against another. There seems to be a need of a practical educator within the several plants to establish a production basis of pounds per hour of the several machines and grades of cotton. In very few instances are speeds considered, especially at the opening process. It would seem that there is but one speed for all types of cotton and one production for all numbers of yarn. The condition of the cotton as it comes from the opener in many cases is never taken into consideration as it passes through the conveyor to the condenser. It appears to me that the whole of a manufacturer's training should be used at this point, for this process surely determines the basis of even or uneven yarn. At one time the bale breaking process was carried on by hand. Several men were given the task of

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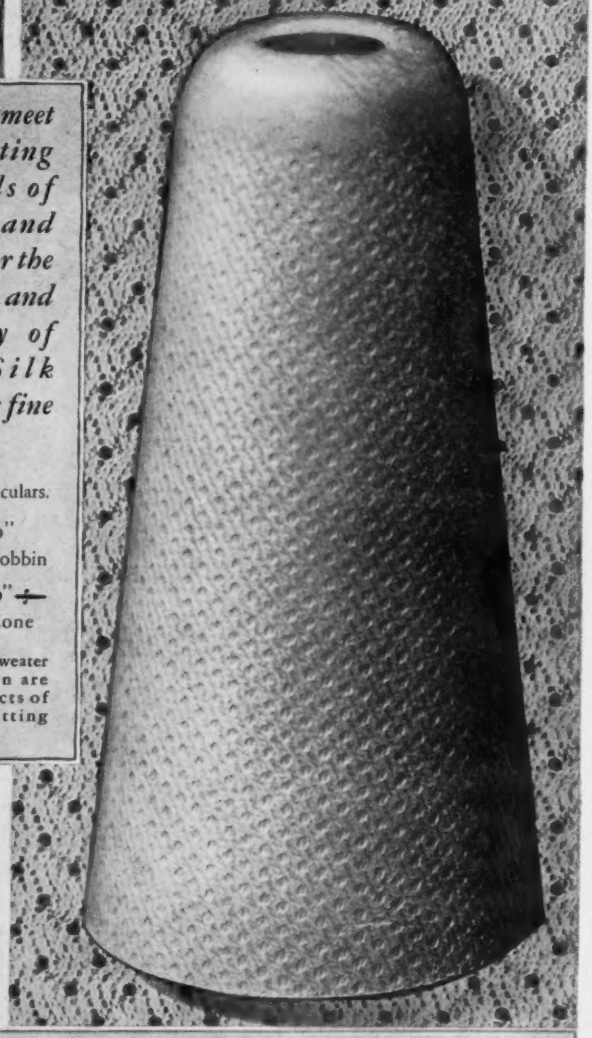

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opening the bales and breaking the layers of cotton apart by hand, then throwing this cotton upon a large pile, this pile being allowed to stand for airing.

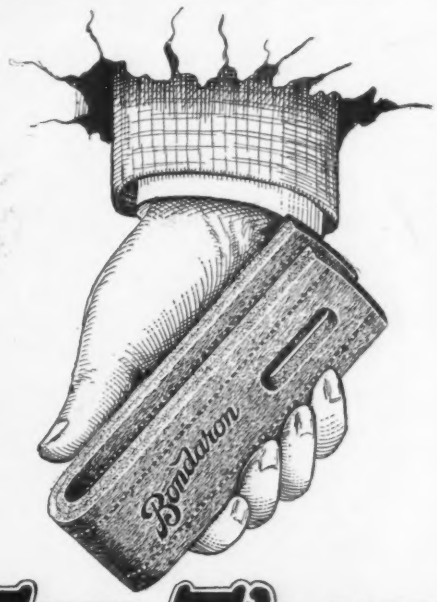
This airing process accomplishes practically what the more modern bale breakers are capable of, but the finer qualities were never obtained, for under the old opening process, there always remained in the mass of cotton that flake of cotton thrown upon the pile by the man who tore the cotton apart. This so-called flake was torn apart more or less during the operation of the machines in passing by the several parts working it out, but never was that flake entirely disposed of, and even as far as the spinning process did we find the flake, out of course, but always there in heavy yarn, while the thinner portions of the old mixing pile were the thin yarns in many cases. I approve of the more modern types of opening machines, but feel that even they can be improved upon to a great degree, for I personally feel that there should never be a bale of cotton delivered to any mill opened, unless it is entirely in fiber form, similar to a bag of feathers, free from a matted form. Without this condition at hand to form a base for a good strong even yarn, the whole operation will suffer, and a great many chances for waste will show in the process of construction.

With these things in mind and the facilities at hand, we can at times deviate from the staid rules of standards and improve the evenness of yarn in many ways. Again allowing that the opener is so operating as to throw off the cotton in fiber form and the air current has taken it to the condenser within the picker room of the mill, then upon examination of that cotton we sometimes find that the fibers have been matted again into small firm packs that really should be opened. Again we see very readily that this condensing operation is really foreign to good yarn making, but we are provided with these machines as are, and it would cost a great deal to reconstruct them to prevent such operations. For even yarn cannot be made where matted lumps are allowed to be left in the opening process. Now if this matted lump is fed to a breaker picker this machine is so constructed that this flake is allowed to pass through, and if we will watch the actions of the feed rolls we will see that these flakes open the space between the rolls to a greater or lesser degree, and surely this action would not take place if the tuft of cotton coming to these rolls was soft and fluffy.

Allowing that the flakes open the rolls and we find that the tuft directly beside it happens to be a very thin place, it will be readily seen that there is nothing that will prevent this portion of the web from jumping directly to the cage, pulling the whole thin tuft from beneath the rolls, leaving a thin place in the web entirely destitute of cotton, causing a very unsatisfactory condition in the process of even yarn making.

There is a way whereby these conditions may be prevented, and while one person may be allowed to remedy his particular trouble, there are a great many who haven't those privileges, but at the same time, allowing for all of these things, he is expected to produce equally as good a product as his neighbor. Should all operating heads be allowed to rearrange these machines to prevent this unevenness, a great portion of the trouble of manufacturing would disappear.

The theme of this discussion is to picture the greater



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We know that "Bondaron" Lug Straps are superior to others on the market, because we have proof in the form of letters and repeat orders from scores of the largest mills throughout the country.

Bondaron LUG STRAPS

outwear straps previously used, sometimes lasting four to five times as long. Reports show that they cut to the minimum the breakage of picker sticks and save the time required to replace them, to say nothing of the increasing of production.

If you are willing to be convinced, and want to cut your loom leather costs in half or more, purchase a trial order of "Bondaron" Straps today and compare them with any other strap on the market.

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CHARLES Bond COMPANY

Leather Curriers and Manufacturers of Belting and Textile Leathers

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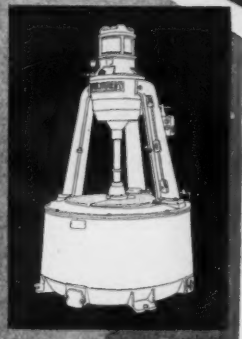

DESIGNED AND BUILT BY SPECIALISTS

Specialization—the concentration of our entire plant and engineering staff on centrifugal extractors and their practical application to industry has done two things for cotton, wool, rayon or silk manufacture—

1. Produced the ideal machine.
2. Made economical extraction a fact.

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CENTRIFUGAL
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possibilities that may be derived from most all cottons used in textile plants, for if the imperfections are removed in the process of manufacturing, especially in the early stages, of course one can readily see where weaving and finishing might be operated at as nearly a maximum production as could possibly be, and that the fabric and thread would be of greater strength, etc. Possibly lower grades of cotton might be used to obtain even a better result than that with which the manufacturer is now satisfied in his own mill.

If machinery builders could cooperate with each manufacturer in his own peculiar problems, and so arrange his machines, also construct his machines, to give him the very best yarn under his own special conditions, in this way, each machine and each department could be operated more successfully at a greater production and at a much lower cost than at present.

I also find in many mills a great tendency to overspeed machines. This really is a mill stone around most textile men's necks. I believe in eliminating the things which tend toward unevenness and weak yarns by applying only such speeds as these conditions will stand to make each unit produce its maximum quantity and quality under the foregoing suggestions, for by so doing, each depart ment will operate under a normal condition which ultimately brings about a successfully running plant. This allows the manufacturer to send his yarn or cloth out upon the market with the utmost confidence as to its quality and quantity.

There are a great many places within a textile plant, if allowed to run haphazard—as some are—that give no end of trouble; namely, if for any reason one discovers that some process is lagging where the operative isn't producing his required production, there is more or less friction created between the employer and employee, each in turn laying the blame upon the other as to the apparent cause. I personally believe in those cases, that it is safe to say at least 90 per cent of this friction is due to improperly adjusted machinery making uneven yarn.

Roll settings and tensions are other sources of annoyance in the process of manufacture. The principles used in these cases are those that have been handed down with the seal of perfection stamped upon them for us to follow. For instance, if we are to use one-inch cotton the settings are given for one-inch cotton, regardless of the bulk which is passing through between the rolls to be set. This bulk is in reality a greater factor than the length of staple itself. This particular regulation in many cases could be handled easier under differently constructed adjustments, for in many cases I find machines so constructed that a great deal of labor is required to adjust for different conditions, and because of that the operation is passed and allowed to operate as was, thus making a mongrel yarn, so to speak.

The tension question upon the strands of cotton passing through the several machines is also a very important item and should not be overlooked, by any means, for if at any point there happens to be an over tension and the strands of cotton are stretched even to an eighth of an inch, and this drawn through several sets of drawing rolls, it will be seen that a thin uneven yarn will be the result. This yarn placed against a normal yarn on beams for weaving are a great source of trouble and annoyance to an

actually saves fuel and labor and MONEY

Overheating of Weave Rooms A Constant Steam Waste

SEVERE outside temperatures exist only during a small part of the heating season. In milder weather, up go the windows and out goes your heat.

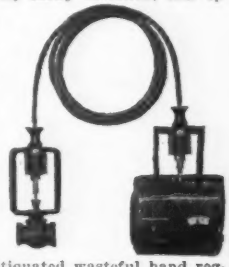
Does your man prudently shut off the heating surface to save coal?

The Accurate Automatic

Sylphon No. 11 REGITHERM DOES!

Uniform Weave Room Temperature is a practical necessity for a uniform quality of products.

A Sylphon Liquid Transmission Regitherm, easily installed, and operating for years without care or cost, will hold the room temperature at just the point where *you set the dial.*



It affords increased efficiency in manufacturing processes, saves time, avoids troubles, and prevents those extremely high temperatures which are prejudicial to the *health and efficiency of workers.*

Investigations have shown a *distinct relation between the temperature of factory rooms and accidents. Now is the time to plan for next winter.* Now is the time to learn all about this great Sylphon Specialty, and *what it can do for you.*

On the economic basis alone, there is no mill which cannot afford to discard antiquated wasteful hand regulation and install this time-proven Sylphon Automatic Control.

No obligation to ask us for the complete story. Mail the coupon or write if you prefer. Your correspondence will be welcome.

THE FULTON SYLPHON COMPANY

Originators and Patentees of the Sylphon Bellows

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Gentlemen: Please send complete details of No. 11 Sylphon Regitherm.

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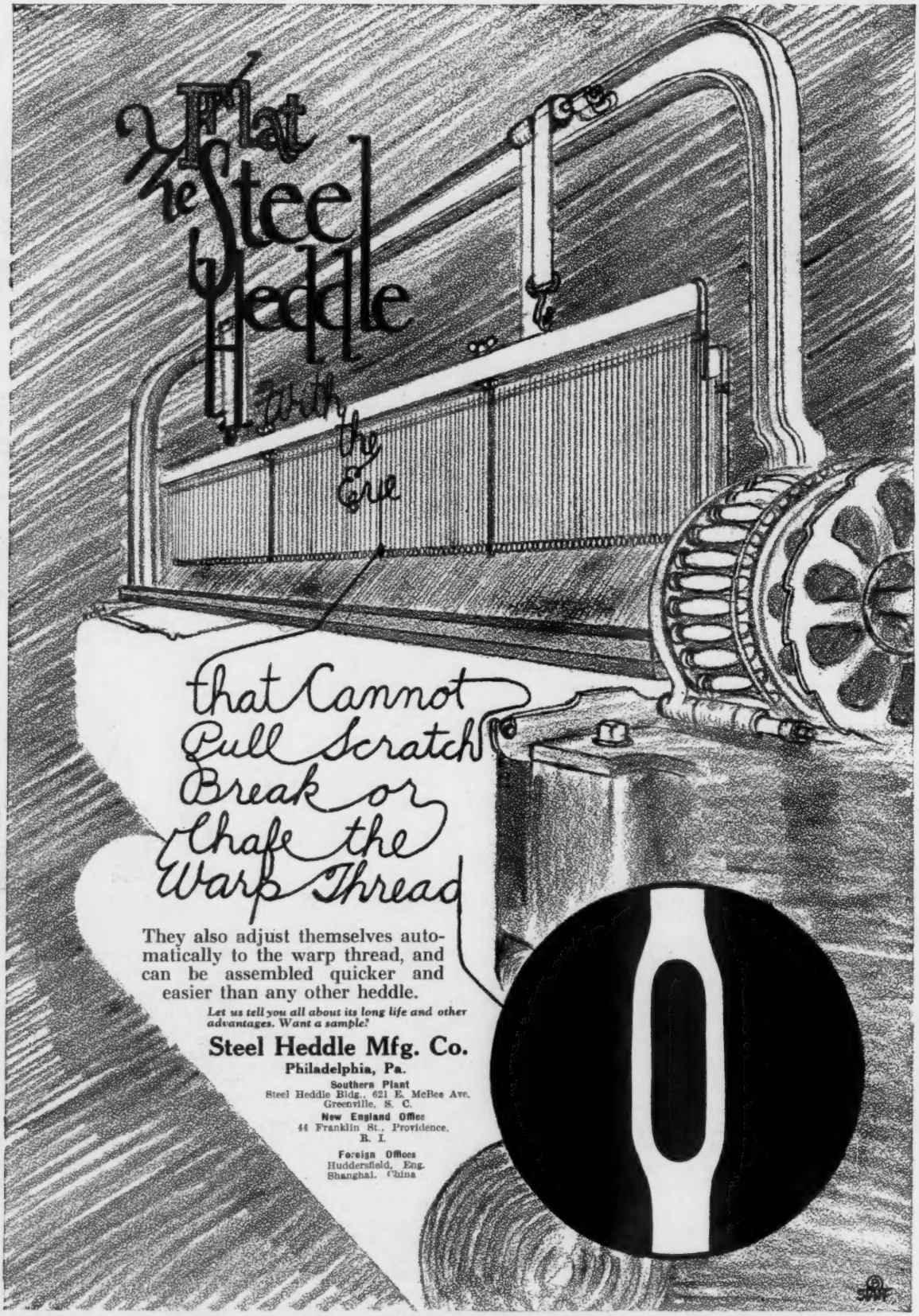
The Flat Steel Heddle with the Eye
that Cannot Pull Scratch Break or Chafe the Warp Thread
They also adjust themselves automatically to the warp thread, and can be assembled quicker and easier than any other heddle.
Let us tell you all about its long life and other advantages. Want a sample?
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operative; also a great loss to a mill owner, both in production and quality.

One might go on perhaps forever, picturing the evils in yarn making, especially where each mill has their own particular construction, also of its own adoption of a grade and type of cotton. No two mills could use the exact sameness of settings, tensions, speeds, etc. So in order to obtain the best results, my version of it all is an adjustor in each separate plant, studying those plant conditions.

N. E. W. (MASS.)

Additional Data on Multiple System in the Spinning Room.

EDITOR COTTON:

In the May issue you published from me a letter with reference to the use of special hands for cleaning in the spinning room, and since the appearance of that letter outlining our practice in this connection, you have submitted several inquiries from readers asking about various points of the multiple system in the spinning room.

For the information of the men who asked these questions, and other readers, I shall endeavor to answer all of the questions asked, in this letter, and thereby give further information as to our conditions and practice.

One of these men wanted to know the type of frame we use, together with the size of rings and gauge and weight of traveler; hank roving; size of front roller and revolutions per minute on 29s to 40s; and number of spindles per side. He also asked how many frames to the doffer, and whether the work is warp or filling wind.

In answering these questions, I will say that we use the Fales and Jenks frame, 1 7/8-inch ring on warp, 2 3/4 inch gauge; 1 3/8-inch ring on filling 2½ inch gauge. The filling is warp wind. The warp traverse is 6¾ inches, and we use 6.00-hank roving, double creel, carded stock. On the filling we have a 6-inch traverse, using 6.90-hank roving, double creel, carded stock. All of the front rolls are one inch in diameter with the average speed of 92 revolutions per minute on the numbers indicated. At present though, we are planning to speed these up. We have 112 spindles per side on warp, 122 on filling. The doffers average 30 frames each on warp and 16 to 18 on filling, warp wind. Our speeder bobbins are 8 x 3½ inches. Under the new system, the price per side for spinners is reduced, roughly, by about 45 per cent; but by handling more than twice the number of sides, their total pay is increased proportionately. In general, the spinners' pay runs about 20 per cent higher than that of the cleaners.

In answer to the questions of another man, I will give you first, the information concerning our carding department. He wanted to know whether any changes were necessary in the carding department for advantage in the multiple system. I will say that no adjustment was made in the carding in changing over to the multiple system, as this would have been a disadvantage. We run a 14-ounce lap on the card, and have two processes of drawing. Our cotton is middling 1-inch plus. Our doffer speed is 9 r.p.m. and we card 84 pounds per day of 10 hours. We have a draft of 10 on the warp spinning and a draft of 12 on the filling spinning, using, as indicated, a 6.00-hank roving on the warp and a 6.90-hank roving on the filling.

Sift Out
the Padded
Piece Work Figures
from Your Weave Room
This loom and that loom may not need it, and this weaver or that one as a general rule produce all that they get paid for, but how can you tell where the "chaff" needs sifting out? Which looms are under-productive?
You have no way to tell, that is no way other than by the
ROOT
PICK COUNTERS
method, and this method surely does pick out the under-producers—Pick by Pick and gives you value received in cloth woven for every pick paid for in production—
Let us send you detailed information—it's free!
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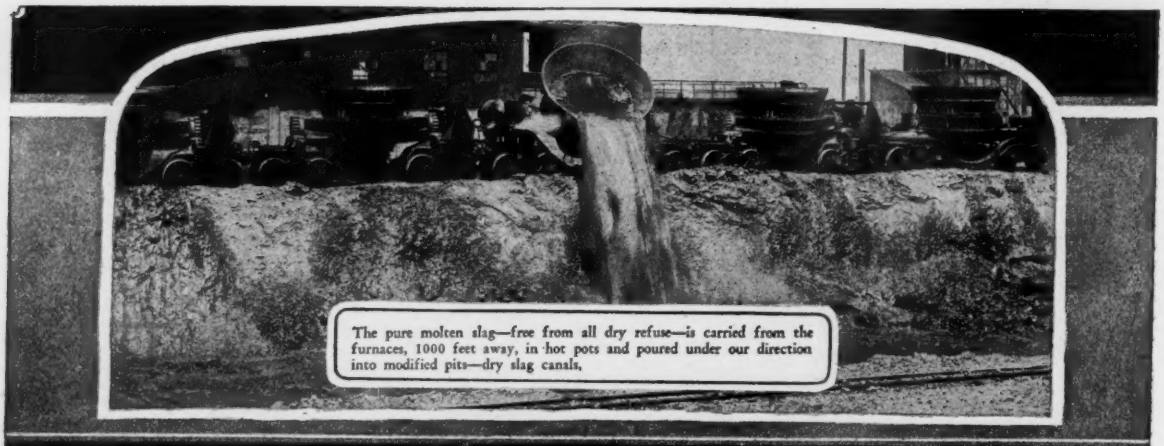
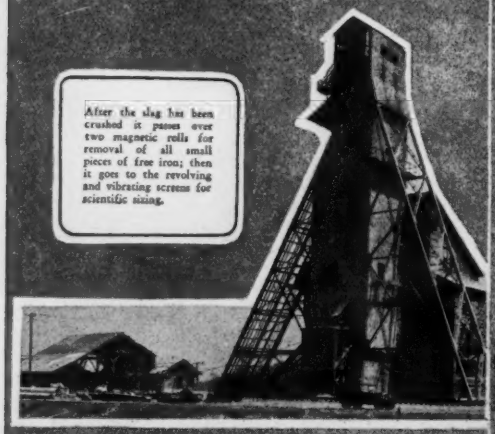


The pure molten slag—free from all dry refuse—is carried from the furnaces, 1000 feet away, in hot pots and poured under our direction into modified pits—dry slag canals.

Scientific Preparation!

The modern scientific way of pouring slag into modified pits enables us to control the thickness of the strata and to prolong the process of cooling and annealing.



After the slag has been crushed it passes over two magnetic rolls for removal of all small pieces of free iron; then it goes to the revolving and vibrating screens for scientific sizing.

BASIC SLAG
For better Concrete

EVERY step in the preparation of basic slag follows a definite, scientific procedure.

When slag is poured in thick strata, it breaks up in much more *cubical* pieces. You steady users of

"ENSLEY" "ALA CITY"
BASIC SLAG
CRUSHED & SCREENED

know how important that is. Also you know from experience, that when slag is cooled slowly there is a marked increase in its solidity, toughness and strength.

That is why pure molten slag (free from all refuse) is poured under our direction into modified pits. This enables us to definitely control the thickness of the strata and definitely control the processes of cooling and annealing.

The final steps—crushing, screening and sizing—prepare the product for the particular project in which it is to be used.

Birmingham Slag Company

Slag Headquarters for the South

ATLANTA BIRMINGHAM JACKSONVILLE
THOMASVILLE MONTGOMERY OCALA, FLA.

Our warp rings are 1 7/8-inch in diameter, No. 2 flange, and our filling rings are 1 3/8-inch, No. 2 flange.

I will say that no part of the cleaning is done by the doffers except sweeping up on week ends. It was asked whether on Saturdays, or other days, when an extra good cleanup is desired, the cleaners were assisted by the spinners or doffers, or whether additional help was given in this work. I will say that no extra help is used for this purpose.

Our doffers work in groups of two each. The warp frames run nine hours between doffs and the filling frames ten hours. In making the change from the old system to the multiple system, the pay of the spinners was increased, and by reducing the number of operatives, the cost per pound was reduced, the cost being the greatest under the old system.

In answer to another question as to the things necessary in changing from the old system to the multiple, I would say that first, the machinery should be put in good mechanical condition. Then, after all possible improvements have been made in the preparation of the stock, make end breakage tests, time studies of the help in different operations, and figure out about what each hand can do, with a reasonable amount of rest. Then figure out a schedule for the cleaners and get all of the hands set for the period of intensive training, which is the big problem in getting on the system.

The beauty of the whole matter is, that the more accomplished, the more possibilities will show up. It is highly interesting work. We have found that we could actually dispense with some of our general labor.

CONTRIBUTOR NO. 4012.

EDITOR COTTON:

I am pleased to answer herewith, the various questions concerning our multiple system of operation in the spinning room which you have sent, following the publication of a letter from me in the May issue, giving certain facts with reference to the use of special hands for cleaning.

On the basis of these inquiries I am glad to give you the following additional facts concerning our system. I would suggest that anyone interested refer back to the letter in the May number, and then read the following information:

As indicated in the May issue, we have 29s warp on which the spinners run 18 and 20 sides, where they formerly ran 10 to 12 sides, 264 spindles to the frame; and 40s filling where the spinners run 14 and 18 sides. The cleaning is done by special cleaning hands.

Answering the various inquiries, we have Fales & Jenks old model frames, 1 5/16-inch filling ring and 1 13/16-inch warp rings, 2 3/4 inch gauge.

We use regular warp wind on our warp, and make our warp from 5.25-hank carded double roving in the creel. Our bobbins are 7 x 3½ inches, front roll 1-inch. The 29s warp have a front roll speed of 116 r.p.m. and the 41s filling make 107 turns. Our cleaning up hands take care of 40 sides.

As to the adjustments necessary in the carding room, in order to adopt the multiple system, I will say that any adjustments made would have been as advantageous to the old system as to the multiple system, but it was necessary that the work be put in as perfect condition as possible before we could adopt the multiple system. We use a 46-ounce lap on the back of the cards, and two processes of

BETTER SPINNING PROVEN BY TEST.
Number Yarn 40's
Twist Square 4.40
Turns per inch 27.8
Staple 1 - 1/16"
Kind Carded
Hank Roving used 4.50D
Draft 10
R.P.M. Spindle 9300
R.P.M. Front Roll 107
Average Size 40.31
Average Break 46 lbs.
The above is a record of a test recently made using roving taken at random from a large Massachusetts mill
Rational long draft spinning. Higher tensile strength of yarns. Less end breakage. No resetting of rolls for changes in staple or count. Center roll weighting eliminated. No change to cap bars or saddles. There, in a nutshell, are the reasons why Washburn's Wood Top Rolls (made of steel, wood, felt and sheepskin) should be on your spinning frames.
Write for our engineer to call, or ask for our test cards and folder.
HAVE YOU SEEN OUR NEW HIGH-SPEED SECTION BEAM?
WASHBURN WOOD TOP ROLLS
WASHBURN
224-234 No. WATER ST.
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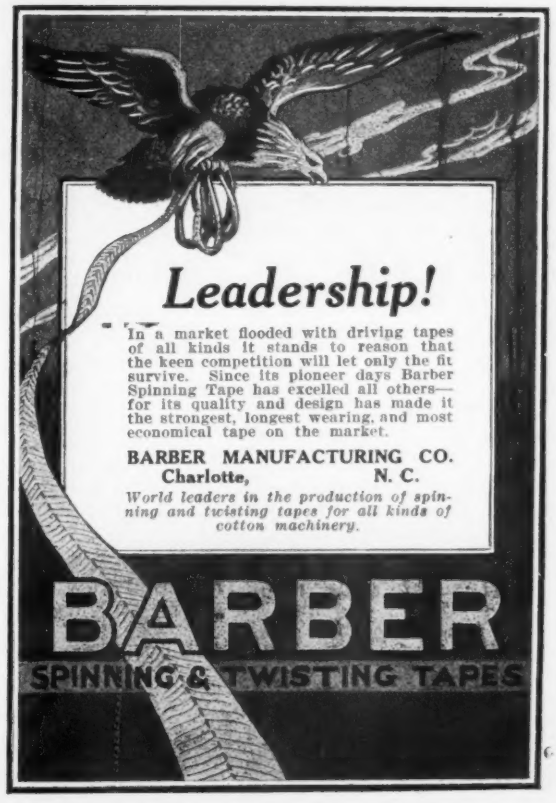
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In a market flooded with driving tapes of all kinds it stands to reason that the keen competition will let only the fit survive. Since its pioneer days Barber Spinning Tape has excelled all others—for its quality and design has made it the strongest, longest wearing, and most economical tape on the market.
BARBER MANUFACTURING CO.
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World leaders in the production of spinning and twisting tapes for all kinds of cotton machinery.
BARBER
SPINNING & TWISTING TAPES

drawing. Our cotton is 1-inch plus, and we card 120.5 pounds per 10-hour day, with the doffer making 13 r.p.m.

We use a draft of 11.00 on the warp and 12.18 on the filling. Both warp and filling rings are No. 1 flange.

No part of the cleaning is done by the doffers.

As to the doffing, this is done in groups by more than one doffer.

Our warp frames run six hours and ten minutes between doffs and our filling frames three hours and forty minutes.

It has been asked whether the pay of the spinners was increased in putting this system into effect, and I will say that this pay was increased on an average of $1.50 per week, and as a result of the multiple system we have a smaller cost per pound, the cost being greater under the old system.

As to other things necessary in changing over from the old system to the multiple system, I would say that one important point is that instructions for the cleaners be enforced so as to prevent the work from being torn up.

CONTRIBUTOR No. 4013.

Inefficient and Wasteful Figuring.

EDITOR COTTON:

Why don't some mills pay? There are many reasons applicable to different situations, of course, but in my opinion, one big contributing cause in many cases is an inefficient and wasteful method of figuring. For those in authority and in positions requiring calculations of different kinds, I am writing this letter to call attention to some methods I have observed to be incorrect.

Cotton.

Inefficiency can center around the cotton and it usually does—more or less. Who buys the cotton? How much leaf, dirt, and foreign matter is there in it? How much short fiber is found? Draw an average staple, after pulling, stretching, and other manipulations one quarter of the staple is found to be good, clean-looking cotton—1⅛-inch staple; on the other hand there is found three-quarters of varieties of short staple which, it seems incredible could have found its way into the clean cotton, short of human agency. It is quite an art to staple cotton properly. Nor is all cotton good carding and spinning cotton. Some cottons even require different machine settings even though the staple is the same. It should be remembered that there is a good and a bad and various intermediate grades of cotton just as there is in anything else. Are you using trashy cotton? There is a simple test: See to it that the pickers and the cards are properly adjusted, and then the waste report will tell the tale. Cotton should be bought to suit the grade of goods being made.

It is to be acknowledged, that it is well nigh impossible to make roving that is commercially perfect. Nevertheless the present system of bobbin take-up can be regulated so that there will be very little stretched roving. In the majority of cases very little attention or consideration is given to this vital matter. Roving is more frequently than not over stretched—that is, there is too much tension. This stretching can begin at the drawing frames and continue through to the finished product.

Roving.

Overstretched roving is costly. I have taken 30 sizes of what was supposed to be 4.00-hank roving and found as heavy as 3.77 hank or as light as 4.15. When I spoke of the matter, there were at least six reasons advanced in justification of its being so. And first among them came the quality of cotton being run. As a matter of fact this was no reason at all. Tension or stretch can occur at the drawing frame, the slubber, and of course the speeder or roving frame. (Roving averaging from 4.15 to 3.77-hank.) In this case also there was an excess of at least three teeth of tension. The 3.77-hank being the heaviest and the largest in diameter, naturally, as layer upon layer is put on the bobbin, it increases the size much faster than the 4.15-hank would.

In two separate instances, using 3.77-hank the first time and 4.15-hank the next, stop the frame when about half full. With calipers take the diameter of each bobbin. The difference found is quite a little. Now multiply each diameter by *pi* (3.1416). For an example, suppose we find the heavy hank to be represented by two inches diameter and the light one by 1⅞ inches diameter. Then the heavy roving will require 6.28 inches to go around the bobbin while the light roving requires only 5.89 inches—a difference of over 2/5-inch. If the light roving is stretched, what can be said for the heavy roving? Such work does not increase dividends by any means. There is no use in discussing it any further.

Spinning.

In the spinning room we find more often than not the same extremes of roving—from 3.77 to 4.15-hank. This roving is run double, the draft being 13.76. The yarn is from 28.41s to 25.97s. (The traveler has nothing to do with the spinning of yarn other than to wind it on the bobbin and put in the twist.) On warp wind the amount of twist increases as the bobbins fill. On filling wind it increases or decreases according to the position of the ring rail. The twist should be calculated from the average traveler speed and not from the spindle speed, for the traveler makes less revolutions than does the spindle. Suppose for the sake of example that we have 28.41s yarn. The square root of 28.41 is 5.33. The twist multiplier being 4.50, 5.33 times 4.50 equals 24.00 turns of twist needed. Suppose we had 25.97s yarn. The square root of 25.97 is approximately 5.10. 5.10 times 4.50 equals 22.95 turns of twist. Thus, 25.97s yarn should have only 22.95 turns of twist, while it actually has 24 turns as the 28.41s yarn has. It should have one turn less. The mill not only loses money here but in the later processes it loses money by such inefficiency and puts out a very inferior and imperfect product.

Stretched roving is the principal cause of uneven diameter in yarns. Such yarns cannot be twisted evenly; most of the twist occurs in the spots of thin diameter. The overseer is blamed for most of the bad work that is put out in the after processes, and unjustly. There are two major operations performed when a certain yarn is made, drafting and twisting. A minor operation is the spacing of rolls. A traveler is put on which will make a firm bobbin without excessive pull. On some spinning frames, a heavy traveler can make weak yarn. Take the same roving, same ring, and make other conditions the same as when weak yarn is made and you can make a yarn that will break two or more pounds stronger with a lighter traveler. This is done by manipulating the thread board.

A spinner can not be expected to produce good work from bad roving. He may make bad bobbins by allowing a machine to get out of order, he may make some slack

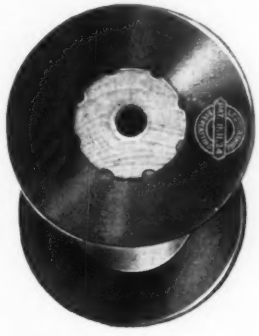
The LESTERSHIRE FIBRE HEAD SPOOL

THE spools which declare regular dividends wherever and however used.

How do Lestershires accomplish this? Because there *is* a difference in fibre spools. Lestershires are unequalled in accuracy of construction, evenness, uniformity of dimensions, uniformity of traverse, ability to run true, and lack of "wobbling".

These features naturally exert a strongly favorable influence upon the quality of production. Also, elimination of slowing-up accidents such as breaking of spool heads, snapping of yarn and waste of spoolsful of valuable yarn, are direct savings of immense proportions.

Lestershire Fibre Head Spools offer you an opportunity to put spooling on an efficiency plane. They are factors in the new order of mill operation—the placing of production costs on a basis where competition can be successfully met. It is a subject worthy of immediate investigation. We will gladly cooperate.



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Reduce direct labor costs.
Eliminate your spool replacement expense.
Eliminate loss of yarn due to spools (in many mills this loss runs into thousands of dollars).
Eliminate all possibility of injury to employes from rough or slivered spools.
Increase about 10% the yardage on your spools.
Eliminate warper kinks and knots due to spools.
Eliminate broken ends on your warpers due to spools and thus increase warper production 20% to 30%.
Materially improve the quality of your warps; and thus better the quality and increase your production generally.

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Protect the Price You Secure on Cotton

Material cost depends not alone on price, but also on weight. If your scale shows more than the real weight of a bale of cotton, then more than the stated price is paid for that particular bale.

Constant, accurate weight is necessary to protect the price you secure on cotton, and this means that the pivots in your cotton bale scale must *always* be as sharp as when the scale was new.

This insurance is given by the Wear-Preventing Suspension in the Toledo Cotton Bale Scale. This Toledo invention never lets the jostling of the platform slide the bearings on the knife edges of the pivots. You can truck bales onto the scale day in and day out without ever dulling the pivots.

Translate this into dollars and cents. Dulling the pivots widens their knife edge contacts, changes the distance between them and causes error. And if this distance is lengthened 1/100 inch—the thickness of an ordinary calling card—then it costs you from three to five pounds of cotton per bale.

Aside from careful buying, this one Toledo invention alone is the greatest protection you can have in regard to your cost for raw material. Our representative will tell you of other great Toledo advantages, and of other Toledo cotton mill scales.

A weight study will tell you whether your present equipment is secretly adding to your material cost. A trained Toledo representative will gladly make this study for you without cost. Just mail us the coupon.

Other Toledo Specifications

Levers strong enough to carry twice their rated load. You need this strength on a cotton mill dock.

Structural steel base, heavy fulcrum brackets, ribbed steel deck, ribbed platform. Sturdy and rigid, preventing variations.

Interchangeable, inserted pivots throughout. In case of replacement the pivot-range and distance are the same as when the scale was new.

Reversible column. You can have the dial face front, side or back.

Dust-proof, moisture-proof dial housing protects the moving parts and dial markings.

Adjustable hydraulic indicator-control. Always brings indicator to quick stop without friction.

Floating double pendulums. Wear-proof and practically frictionless.

Large indicator-pinion. Stabilizes the indicating mechanism.

Five-foot line of weight indications, large figures, marks far apart. Easy to read. Prevents human mistakes.

Capacity enough to show weight of bale entirely on the dial. Saves time. Cuts cost of handling.

Toledo Cotton Bale Scale No. 1921

Toledo Scale Company

Toledo, Ohio

Canadian Toledo Scale Company, Windsor, Ont.

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Cotton, July, 1928.

twist yarn, and he may make some double yarn by allowing an end to break and catch onto a neighboring end. Such an end can not run very long as it will fill up the ring and stop the bobbin, even though it runs long enough to make, say, 50 inches and breaks away. This end will soon be covered and will get by the spinner naturally enough. If the spooler guides are properly set, this coarse end will not pass through them. So do not be so free to hurl the first stone at the spinner. Take up spinning yourself for an experiment to see how it is. Bad bobbins with good yarn upon them can be reclaimed; so can slack twisted yarn.

Warping and Slashing.

Now see how the manufacturer loses in warping and slashing. In running these 25.97s and 28.41s yarns, we have yarns of different diameters. Examine the warper beam when it is full. You will notice that the ends are not perfectly level. This is caused by having threads of different diameters. The 28.41s thread will not fill the beams as fast as the 25.97s. After the first 3000 yards, the differences are perceptible; and as the yardage increases, so do the depressions caused by the finer threads. Now caliper this beam when it is three-fourths full or eighteen inches in diameter. Where the 25.97s ends have been running, the diameter is 18 inches or the circumference 56.55; and where the 28.41s ends have been running (shown by the marked depression), the diameter is only 17.875 inches or the circumference 56.15 inches. We have a difference of 2/5-inch. Now, you can figure out for yourself the number of yards these fine ends will lose in 21,000 yards. Start with an 8-inch barrel, full beam 22 inches. The diameter of the 28.41s yarn is .0072 and the diameter of the 25.97s yarn is .0075. By this you can see that the 28.41s has much less yardage than the 25.97s. The beams are full—22 inches in diameter. Remember that the ends are not delivered to the beam but are pulled from the warper creel by the beam. Right here is a good opportunity for some one to save his mill a good sum of money each year by saving of slasher waste.

If you watch closely, you will notice the 25.97s ends occasionally run into these depressions at the warper. These warp beams with ends of various lengths are put in at the back of the slasher. The beams are full, 22 inches in diameter where the 25.97s yarn is on the beams. When the slasher is started with its full set of beams, every revolution of these beams at the high places gives a length of 69.08 inches; while at the depressed or low places, the length is 68.68 inches, about 2/5-inch less. It is now evident that at every two and one-half revolutions, the fine ends of 28.41s yarn have to stretch one inch, and so on throughout the unwinding of the beams. The ends that are stretched are the ones that break. The life and elasticity are taken out of these ends. At the front of the slasher, the operator takes a parting shot at these ends by using friction between the calender roll and the beam. The same ends that were stretched one inch in every 69 are again acting the same role that they did on the warper beam—that of making slight depressions on the loom beam. By not filling up regularly, the yardage here is the same with the 25.97s as with the 28.41s. This is noticeable when the beam is run out of the loom. The ends on this beam are of various diameters, and being so, do not fill evenly. The heavier yarns, being wound on most tightly, while the light-

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er yarn is wound on much more loosely. Across the face of the beam it may look very level, owing to the compression roll. The fine ends running on the beam much looser than the coarser ones is the main reason the slasher tender uses friction to keep the finer ones which are running in a soft place up.

The set at the back of the slasher is now run out. Out of a set of eight warper beams, one is practically empty while the others have considerable yarn left on them. Cutting this off, we find we have eight to fifteen pounds of waste from one set of warper beams. And what this waste amounts up to, and how it drains from the efficiency quota of the mill! Such production as this helps to put machinery belts on the loose pulleys. Who is to blame? The spinner? Likely not. He is not the cause of all these fine ends, these coarse ends, this waste. And for his final vindication let it be said that he is not the cause of this diversity of the fibers.

Weaving.

When this beam of varying diameters and lifeless yarn is put in the looms, we have the same thing that happened at the back of the slasher—a stretching of the finer ends. At every rotation of the yarn beam (which is eighteen inches in diameter) there will be delivered 56.55 inches of 25.97s yarn, while with 28.41s there is delivered only 56.15 inches. Here is a difference of about 2/5-inch of 25.97s. The ends which have been stretched 2/5-inch at the back of the slasher are now stretched another 2/5-inch at the loom —4/5-inch in all. These ends are not far from the breaking point if they are not there actually. Yarns made from one grade of cotton will stretch more than yarn made from another class. A sized yarn will not stretch as much as an unsized one. A yarn is an incorporation of fibers twisted together. In stretching, these twists straighten out to a certain extent, and if not incorporated firmly, they will slip and become loose and unraveled.

In running, the lay motion given to the reed beats in the filling at the fell of the cloth. As this is done, there is a slight jerk on the warp end and this action is what causes these stretched, weak, and lifeless ends to snap and break. The warp ends in interweaving with the filling are affected by two conditions; the bending out of their course of the threads as they pass each other, the spacing of the threads, and their diameters. This bending around and out of their courses is known as contraction, take-up, or shrinkage. At every rotation of the warp beam at the back of the loom there is a difference of 2/5-inch between the heavy and the light ends. These light ends being the tightest, and the ones that practically doing all the work as to let-off—more so if frictional let-off is used—are naturally the ones that break.

I will not go into the weaving at this time other than to say there is no reason for such an unevenness of yarns, of warp or filling; no reason why there should be 80 to 100 pounds of waste per slasher per week cut from the beams at the back of the machine; no reason why a mill should not pay good dividends; no reason why the spinner should be blamed for bad work.

There have been, within the past few years, printed in COTTON, articles that have been very helpful to many, and anybody with ambition should read COTTON as it is the only paper in the United States that has so many useful rules and so much information pertaining to the processing of yarns and fabrics.

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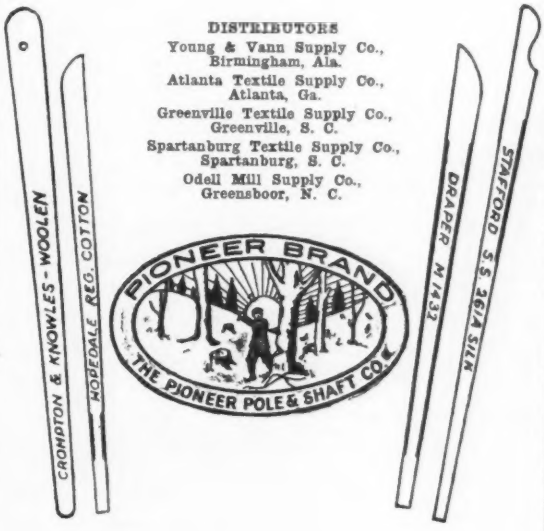

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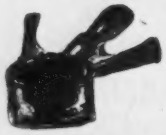

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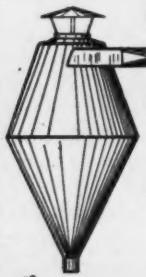

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I am now going to show how mills lose money. Here is the construction of a cloth made by a Northern mill.

Sley	Picks	Width	Yards
54	32	18.50	4.60

Warps No. 14s,
Filling No. 7.5s.

In this construction we get the following:	
Average No. of yarn	10.59s
Yards of 10.59s to pound	8895.6
Width of ends in reed	19.60
Ends per in reed	50.97
Reed	25.48
Warp construction	.0531
Weight of Filling	.0992
Picks per inch minus contraction	30.30
Filling contraction	.0534
Weight of Warp	.0940
Yards per pound	5.17
Percentage of Warp	.475
Percentage of Filling	.525
Diameter of 14s Warp	.0097
Diameter of 7.5s Filling	.0130
Diameter of 10.59s, average number	.0112
The percentage of warp is	.4750
The percentage of warp is	.5250
The percentage of size is	.05

You will please notice that this cloth is figured as 5.40 yards to the pound when it should be 6.15 or a loss of 3/4-yards to each pound.

You will also note that I have merely given answers and no rules. There is in this article all the material necessary to figure yardage properly. Sometime later I will show you how mills make serious mistakes in figuring yards to the pound. A few months ago I saw a large government order lost by inaccurately figuring yards to the pound. One cannot take a yard of cloth from a loom and weigh it to get the yards per pound. It is risky business unless one is master of the business.

H. W. (N. J.)

Instructing Operatives.

EDITOR COTTON:

I have just been reading "Old Timer," and incidentally, have recently returned from a little trip through the textile belt. During this trip I had occasion to visit some mills, and found their schooling advantages, community and welfare work, etc., well stressed. These things are being looked after in a more thorough manner, I believe, than ever before, and the good results are being demonstrated by the youngsters as they leave the schools and take their positions in the mills.

However, the thing that strikes me more forcibly in this connection, is the fact that so little is being said about how to handle these youngsters when they are given employment in the mills. For instance, as they come up through the grades of school and reach the graduation point—all the way through—they are being taught new things, and when they enter the mills, the foremen should be instructed to keep them learning; each day adding to their store of knowledge and striving to have them become more and more efficient in their work. Even though they may become experts in their particular line, they should still be instructed and trained for the next step up.

There is no denying the fact that a student, fresh from school, can learn things more readily than those who have not had these advantages, and these students are the ones we must count on to take the lead in the evolving of a better quality of goods and in other improvements.

The writer has been noticing how the school kids have been taking hold of the different jobs in the mills. They are more apt in their understanding of instructions concerning the various duties and responsibilities belonging

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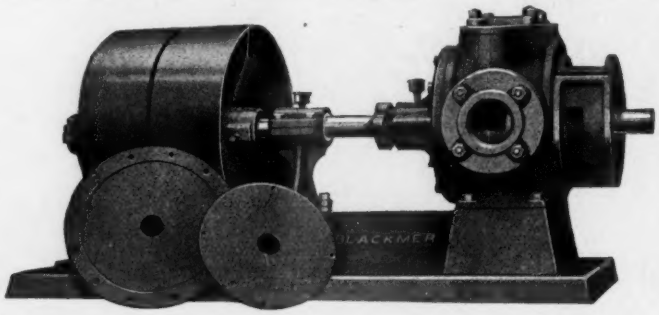

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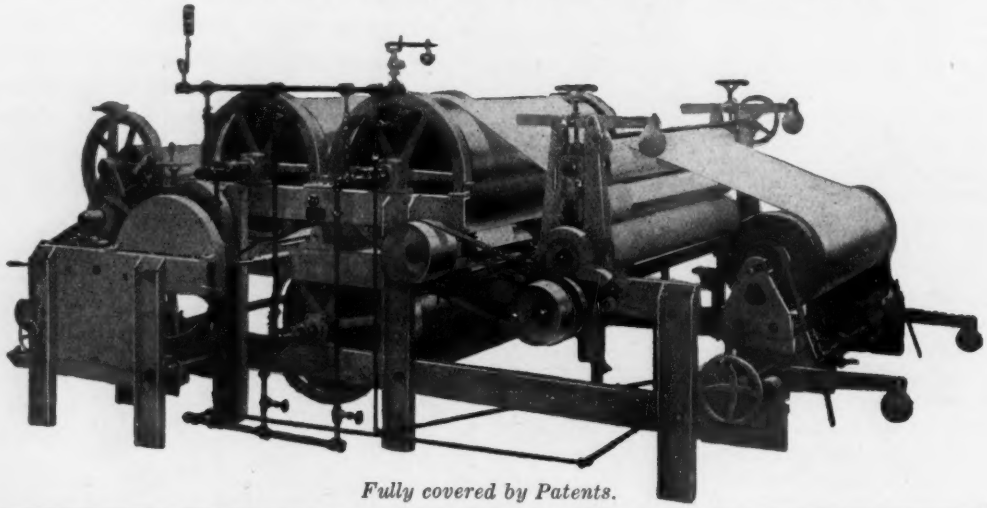

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to the jobs they are about to accept. They are not having to be told all the time as we used to have to do. This gives the foremen more time to devote to other duties and tends to make things more pleasant, which should give more time for thoughts about improvements.

Some of our machinery these days requires more educational skill than in former years, or that is the way it looks to the writer. The old rough-and-run way of putting production through a machine is a thing of the past, in some mills anyway, and will be in all of them in time. The last one to get in line with the more progressive methods of getting a better piece of goods is going to be longer in getting back in than he thinks for. It is a credit to a mill to strive for a better quality of goods for his customer before being made to do it. If he is being forced to come up to a standard that some other man has set for the market, he gets no credit for it.

We are getting the educational advantages now, and let's all see how well we can improve on these new scholars as they come to work for us in the mills, by giving them examples in the betterment of our products, and at the same time let them feel that any position they are given is as important as any of the higher ones; for it takes all to make the mill go, and they are a part of its organization. As they qualify they should be pushed on up to as high a position as they may be entitled to hold. Then take a long chance and give them the benefit of the doubt.

CONTRIBUTOR NO. 14.

Making Better Ball Warps.

EDITOR COTTON:

We are manufacturing coarse yarns, 29s to 38s. This yarn is made into ball warps, run on Entwistle warp machines. When I first came on the job the warps were running badly. I thought at first that this was due to careless spooling, so I had each spooler-hand's spools marked with different color of chalk. By doing this I would be able to find who was making bad spools. After marking the spools for a day or two in this manner the warps ran some better. Still, I saw room for improvement. At that time the warper-hand was running four warps to the creel. The last warps to the creel gave a lot of trouble.

I suggested to the superintendent that we should run only three warps to the creel. He said there was not enough yarn put on the spools, which made them run bad on the last set of warps and this could be improved by adding more yarn to the spool.

We had the spooler-hands to make the spools bigger. This did help some; the spools didn't run empty on the last warps to the creel. Then the first set of warps to the creel gave trouble in starting and the ends would run off at the end of the spools and cause them to tangle. This increased the number of tangled spools and made much waste. We then decided to try the method that I suggested, namely, to run only three warps to the creel. We could then have the spooler-hands to make smaller spools, and too, they did not run empty on the last set of warps to the creel.

This improved the warping thirty per cent. We are now making warps that are better, for they have less knots and we get off more pounds a day than formerly.

MACK (N. C.)

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Cabled Twine Loom Harnesses

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Preventing Curled Cotton in Verticals.

EDITOR COTTON:

I note in April COTTON the problem that "Contributor No. 3056" is having with cotton curling in the vertical openers, which are run in tandem. He says the cotton curls up and seems to be slightly twisted up into stringy pieces, without the desired fluff and bloom.

I want to suggest that he raise his cylinder by screwing it up to the highest point. By doing this I believe his trouble will be overcome, because I suggested this to a mill not so long ago and the cotton came out fluffy and bloomy.

If I can be of any further help I will be glad to do so.

T. L. S. (N. C.)

EDITOR COTTON:

The trouble that "Contributor No. 3056" is having with ropy and lumpy cotton, as explained in the April issue, may lie in the arrangement of his vertical openers. While the vertical opener will curl cotton badly if improperly operated, it should not be objectionable if properly run. Where two verticals are run in tandem, the second machine should go faster than the first. The function of the vertical being to expand the cotton from a compressed condition into a fluffy and bloomed state, it is necessary to move it faster as it expands.

He is probably running his first vertical too fast, and the second too slow. The first one should be slowed down to about 400 r.p.m., and the second run about 600 r.p.m. If, as is likely, he got somewhat better results when he cut the speed from 525 to 375 r.p.m. it was due to the fan drafts being wrong. He may have either too much or too little draft; either of which troubles can cause curling. If cutting the speed helped, it is probably a case of too little draft in the pipe taking the cotton away from the machine.

This draft can be increased easily by speeding up the screen of the condenser. If this screen is turning less than about 15 r.p.m., it is not discharging the cotton fast enough to keep a sufficiently thin sheet on the screen to permit a free passage of air. Thinning the sheet on the screen will accomplish far more than speeding the fan; just as opening a water faucet wider is better than increasing the pressure.

The draft should be just enough to take the cotton through the vertical openers in a suspended state, and to carry it away briskly. If the draft is too weak, the centrifugal action of the beaters in the verticals will throw the cotton out to the sides and roll it around a number of times, so that instead of being bloomed, the opposite action takes place. On the other hand, if the draft is entirely too strong, its very intensity will tend to oppose the action of the beater in fluffing the stock, and will make it ropy. A little experimentation along this line will certainly give better results.

This contributor does not state whether his Buckley is one of the old style opener cylinders, or one of the new type small beaters as used in place of the blade. The small Buckley should never be set as wide as 3/8-inch, as this will invariably cause ropy work. Even the larger cylinders should not be set too wide, and a setting of not over 1/4-inch is suggested.

The settings given for the blade beaters are all right, and the trouble is caused before the cotton reaches the blades. The use of Buckley cylinders of the new small type in all pickers is a great help on 1 1/16-inch cotton. These new type cylinders have perfectly straight arms about 2 1/2-inch long set in a smooth barrel. They offer a square striking edge to the lap, and avoid stringing the cotton.

As a further suggestion, if this contributor will take advantage of the first opportunity to look over an equipment of horizontal cleaners, he will find that these have less tendency to curl cotton. One vertical, in tandem with a horizontal, will do more cleaning by far than the two verticals, and will rope the stock less. However, if the speeds and air draft are balanced, as suggested, there will be a very pronounced improvement in the operation of the two machines.

P. S. (MASS.)

Figuring Trumpet Sizes on Cards and Drawing.

EDITOR COTTON:

I notice in the April issue a number of answers to "G. N. (Ga.)" who had asked in the January issue for methods of determining the proper size of bore for card and drawing frame trumpets, and also for the correct size to use for the 68-grain drawing sliver.

Being a new subscriber, I did not see the original inquiry, but I am taking the liberty of submitting some particulars which I follow in my own practice, in the thought that they may be of interest in this connection. The particulars are:

	Weight in grains	Size of hole	Size of drill
Cards	60	.175-inch	16
Cards	65	.182-inch	14
Cards	70	.190-inch	12
Breaker Drawing	60	.150-inch	25
Breaker Drawing	65	.158-inch	22
Breaker Drawing	70	.160-inch	20
Finisher Drawing	60	.140-inch	28
Finisher Drawing	65	.143-inch	27
Finisher Drawing	70	.150-inch	25

I might say in connection with these figures that allowance must of course be made for the quality of the cotton.

A. K. (CANADA.)

National Diazine Bordeaux 7B Conc.

National Aniline & Chemical Co., Inc., 40 Rector St., New York, announces the production of a new red for dyeing cotton, rayon and silk. It is especially recommended by the company when good fastness to washing is desired, such as for dyeing embroidery yarns, sewing thread, ginghams, shirtings, etc.

New Split Lap Preventer for Pickers.

Long Brothers, Albemarle, N. C., are marketing a new split lap preventer, for application to Kitson and other types of pickers. This attachment works between the screen box and the calender roll; resembling a rake 40 inches long, or the width of the machine. It is controlled by a weight and a lever to regulate the crease in the cotton, as desired. The device is so constructed as to make a simple crease in the cotton on the inside of the lap, it is stated, to eliminate the possibility of the cotton splitting and hanging together while running out on the cards.

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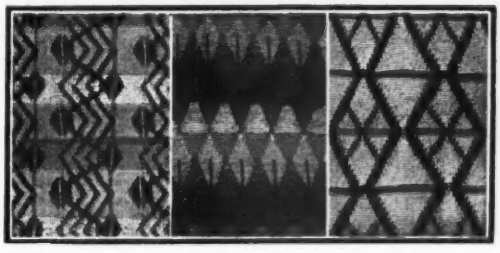

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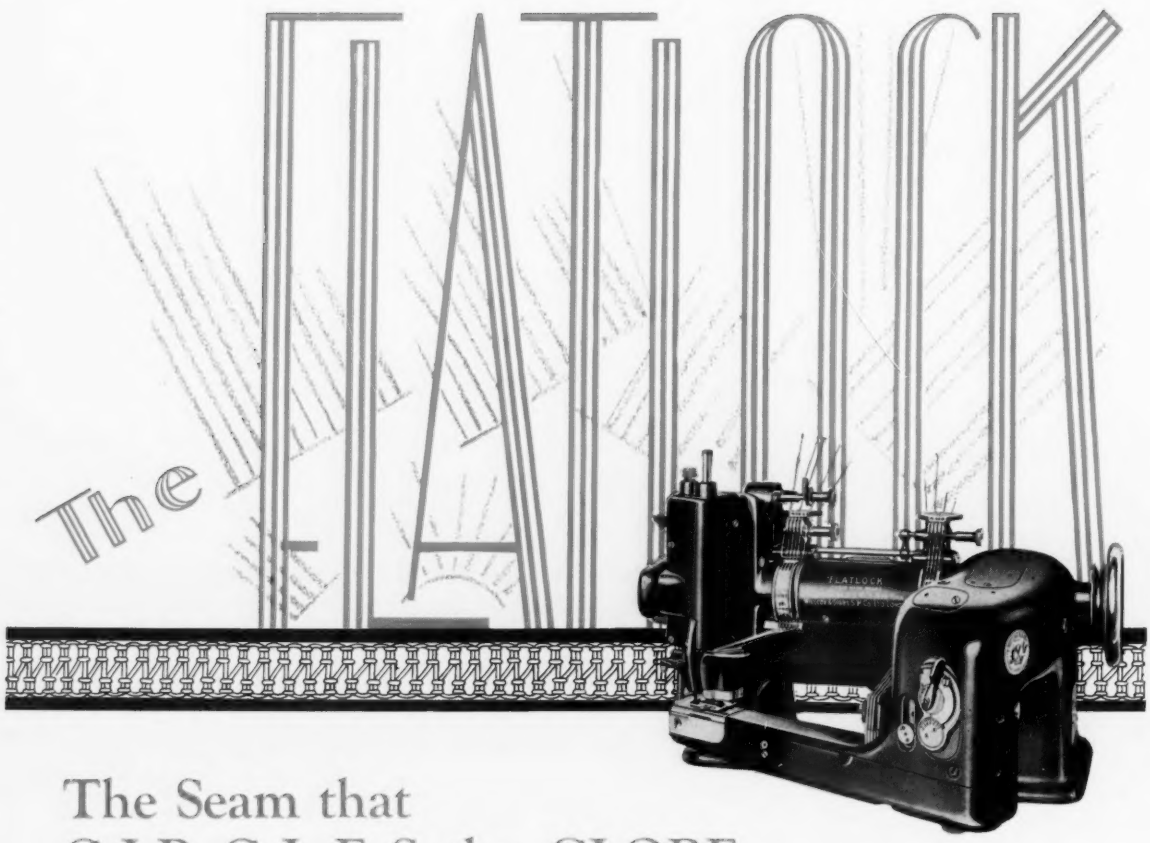

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Calculations for the Knitting Mill

Accurate Figuring Serves as a Check on Production and Costs and Prevents Avoidable Leakages in Management

By William Davis, M. A.

A number of items called for in the daily routine of mill work can be made the subject of accurate calculation in advance of the work going through, and it is a great advantage to all to have such matters as output, weight and so forth settled accurately in advance as it enables the management to budget for mill supplies in the right quantity. Accurate calculation also serves as a valuable check on such matters as production and costs and may lead to the discovery of sources of avoidable leakage in the factory or the management. It is of particular interest to know, within a few dozens, the output which may be expected from your plant of automatic hose machines, the winding power can also be properly localized and determined, while the number of linking machines required to take care of a given plant or mill output can also be determined. These various points are explained in the asserted series of mill problems which follow.

Example 1. Calculate the time required to work 1000 dozen pairs of hose on 12 automatic hose machines with 1100 courses on leg and foot at 240 revolutions per minute, with 240 courses on heel and toe at 110 courses per minute.

$\frac{1100}{240} = 4.58$ minutes for leg and foot.

$\frac{240}{110} = 2.18$ minutes on heel and toe.

6.76 minutes per hose $\times$ 24 = minutes per dozen pairs, and divided by 60 gives the hours. This is given as 1000 dozen pairs and as the output is taken up by 12 machines, the time is correspondingly divided thus:

$$\frac{6.76 \times 24 \times 1000}{12 \times 60} = 225\ 1/3 \text{ hours.}$$

This does not make allowance for stoppages and the actual time would be increased by the percentage required to be allowed for stopping.

Example 2. Calculate the weekly output of eight hose machines making 240 revolutions per minute on leg and foot and half speed on heel and toe. On leg and foot there are 100 links at 12 courses per link and 20 links on heel and toe together at 6 courses per link. The actual time worked by the machines per week is 40 hours.

100 links $\times$ 12 = 1200 courses on leg and foot.
20 links $\times$ 6 = 120 courses on heel and toe.
1200 $\div$ 240 = 5 minutes for leg and foot.
240 $\div$ 120 = 2 minutes for heel and toe.

Total 7 minutes for the hose.

7 $\times$ 24 = minutes for one dozen pairs of hose.

The total available time for the eight machines is given thus:

40 $\times$ 60 = minutes per week.
40 $\times$ 60 $\times$ 8 = minutes for 8 machines.

Dividing this by the time per dozen pairs gives the output in dozens of pairs in this period:

$$\frac{40 \times 60 \times 8}{7 \times 24} = 114\ 2/7 \text{ dozen pairs.}$$

It is sometimes required to figure out the number of machines of various types which will keep up a given production and to state the number of winding spindles needed and the number of seaming and linking machines to finish the articles. This kind of problem is exemplified in the following example.

Example 3. Find the number of hose machines with corresponding linking and welting machines required to produce 3000 dozen pairs of hose in a week of 54 hours, 15 per cent stoppages. 720 courses in leg and foot operating at 225 revolutions per minute, 216 courses in heel and toe at 103 revolutions per minute.

The average production for a linking machine is 150 dozen pairs per week and that of a welting machine is 250 dozens per week.

720 $\div$ 225 = 3.2 minutes for leg and foot.
216 $\div$ 103 = 2.09 minutes for heel and toe.

Total 5.29 minutes per hose.

$$\frac{54 \times 60 \times 35}{100} = \text{actual time which the machines work.}$$

5.29 $\times$ 24 = minutes required to work one dozen pairs of hose.

The dozen pairs from one machine is obtained thus:

$$\frac{54 \times 60 \times 85}{5.29 \times 24 \times 100} = 21.69 \text{ dozen pairs from one machine.}$$

But the output required in this time is 3000 dozen pairs so that the number of machines are obtained thus:

$\frac{3000}{21.69} = 138.3$ machines = 139 machines required.

The linking machine has an output of 150 dozen pairs so that 3000 $\div$ 150 = 20 linking machines and for welting 250 dozen is the output so that 3000 $\div$ 250 = 12 welting machines required

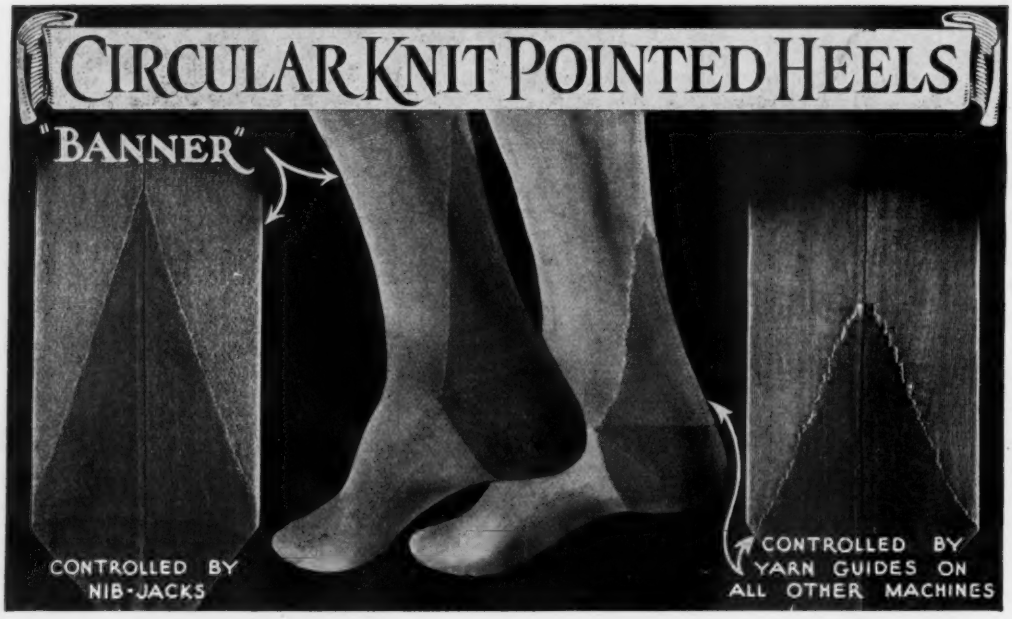
This may be carried a stage further to find out the winding power required to be set on to keep pace with this production. Let the weight of this article be 1 pound 10 ounces per dozen pairs, 22s worsted counts, spindle speed 500 feet per minute, allow 5 per cent yarn waste in making.

$$\text{One spindle} = \frac{500}{3} \times 60 \times 54 = \text{yards wound in 54 hours.}$$

But of this counts, 22s worsted, there are (22 $\times$ 560) yards per pound so that the pounds wound in this period by one spindle is obtained as follows:

$$\frac{500 \times 60 \times 54}{3 \times 22 \times 560} = 43.8 \text{ pounds of yarn.}$$

There are 3000 dozen pairs and they weigh 1 pound 10 ounces = 26 ounces per dozen so that the total weight required is set out in the following, allowing an extra 5



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A glance at the above illustration will show you the marked contrast between the Pointed Heels made on "BANNER" Nib-Jack machines and those of all other makes using other methods.

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per cent on the weight for waste incurred in making the articles.

$$\frac{3000 \times 26 \times 105}{16 \times 100} = 5118.75 \text{ pounds in 3000 dozen pairs}$$

5118.75 ÷ 43.8 = 116.8 or 117 spindles required.

As no allowance has been made for spindle stoppage, the number would require to be augmented by the figure allotted to stoppages.

Example 4. Calculate the output in dozen pairs of hose in a plant of 40 hose machines in a net working week of 32 hours, the balance is deducted for stoppages. There are 960 courses on leg and foot and 240 courses on heel and toe, the ordinary speed is 240 courses per minute on leg and foot and on heel and toe 100 courses per minute.

960 ÷ 240 = 4 minutes on leg and foot.
240 ÷ 100 = 2.4 minutes on heel and toe.

Total 6.4 minutes for a complete hose.

6.4 × 24 = minutes per dozen pairs.

The total time available is given as follows:

32 × 60 = minutes per machine.
32 × 60 × 40 = minutes per 40 machines, which being divided by the minutes per dozen pairs gives the following set out:

$$\frac{32 \times 60 \times 40}{6.4 \times 24} = 500 \text{ dozen pairs.}$$

If the mechanic receives $60 per week along with 5 operators receiving $16 per week each for operating this production, then the cost of such labor items per dozen pairs is set out as follows: 5 times 16 = $80. for the operators plus $60. for the mechanic = $140. and this has to be divided over a production of 500 dozen pairs in this period: 140 ÷ 500 = 28 cents per dozen pairs.

Example 5. Calculate the output in pounds on a silk winder with 18 spindles, each winding at the rate of 480 feet per minute on 450 denier artificial silk. 36 hours working week actual.

480 ÷ 3 = 160 yards wound per minute per spindle.
160 × 18 × 60 = yards wound per hour per 18 spindles.
160 × 18 × 36 = yards wound per 36 hour week.
450 deniers divided into 5282.5 = 11.74 equivalent cotton counts. Therefore 11.74 × 840 = length of yarn in one pound and this divided into the total number of yards will give the pounds wound in the given time:

$$\frac{160 \times 18 \times 60 \times 36}{11.74 \times 840} = 629.7 \text{ pounds of yarn wound.}$$

Example 6. Calculate the time required to work 2000 yards of knitted fabric on a machine with 12 feeds working at 32 cylinder revolutions per minute, 22 courses per inch.

2000 × 36 = inches of fabric and as there are 22 courses per inch:

2000 × 36 × 22 = total number of courses worked.

There are 32 × 12 courses inserted per minute and 32 × 12 × 60 per hour so that the total hours are obtained thus:

$$\frac{2000 \times 36 \times 22}{32 \times 12 \times 60} = 68.75 \text{ hours.}$$

Example 7. Estimate the yards of fabric produced in 48 hours by a section of 5 circular fabric knitting machines, 8 feeds each, working at 36 cylinder revolutions per minute with 14 courses inserted per inch. Deduct 20 per cent for stoppages.

36 × 8 = courses per minute per machine.
36 × 8 × 5 = courses inserted per minute on the section of five.
36 × 8 × 5 × 48 = courses in 48 hours less 20 per cent for stoppages =

$$\frac{36 \times 8 \times 5 \times 60 \times 48 \times 80}{100} = \text{courses in a week less stoppages.}$$

But there are 14 courses inserted per inch and 36 inches to the yard so that the final output is obtained thus:

$$\frac{36 \times 8 \times 5 \times 60 \times 48 \times 80}{14 \times 36 \times 100} = 6582.8 \text{ yards output.}$$

Example 8. Calculate the yards of fabric produced from two multi-feed frames with 40 feeders each, 12 cylinder revolutions per minute, 14 courses per inch, 6 hours actual work per day with stoppages deducted.

12 × 2 × 40 = total courses worked per minute.
12 × 2 × 40 × 60 × 6 = total courses per 6 hours.

But there are 14 courses per inch and 36 inches per yard so that the output in yards is obtained thus:

$$\frac{12 \times 2 \times 40 \times 60 \times 6}{14 \times 36} = 685.7 \text{ yards output.}$$

Example 9. A 26 inch diameter frame with 6 feeders has two at work on 120 denier artificial silk, 2 working on 40s cotton and the remaining pairs on 48s worsted. The speed of the machine is 28 cylinder revolutions per minute. Find the length produced in 8 hours working with 36 courses per inch and take-up of 2.25.

This is worked in two operations, first find the length of material produced in the given time and using this length at the second step find the weight of the various materials in the fabric:

28 × 6 × 60 = courses worked per hour.
28 × 6 × 60 × 8 = courses worked per 8 hours.

There are 36 courses per inch and 36 inches per yard so that the yardage is obtained as shown:

$$\frac{28 \times 6 \times 60 \times 8}{36 \times 36} = 62.2 \text{ yards.}$$

At the second step we require to calculate the weight of this length of fabric by the usual formula:

36 × 26 × 3 1/7 × 2.25 × 62.2 = yards of yarn in web. But this total has to be divided up in the ratio of one third to each of the three materials mentioned so that the weights are shown by taking one third and dividing by the counts and the basis: 120 denier artificial silk = 5282.5 ÷ 120 = 44s single cotton equivalent. Weight of 120 denier =

$$\frac{36 \times 26 \times 3\ 1/7 \times 2.25 \times 62.2 \times 1}{44 \times 840 \times 3} = 3.7 \text{ pounds.}$$

40s cotton:

$$\frac{36 \times 26 \times 3\ 1/7 \times 2.25 \times 62.2 \times 1}{40 \times 840 \times 3} = 4.07 \text{ pounds of 40s cotton.}$$

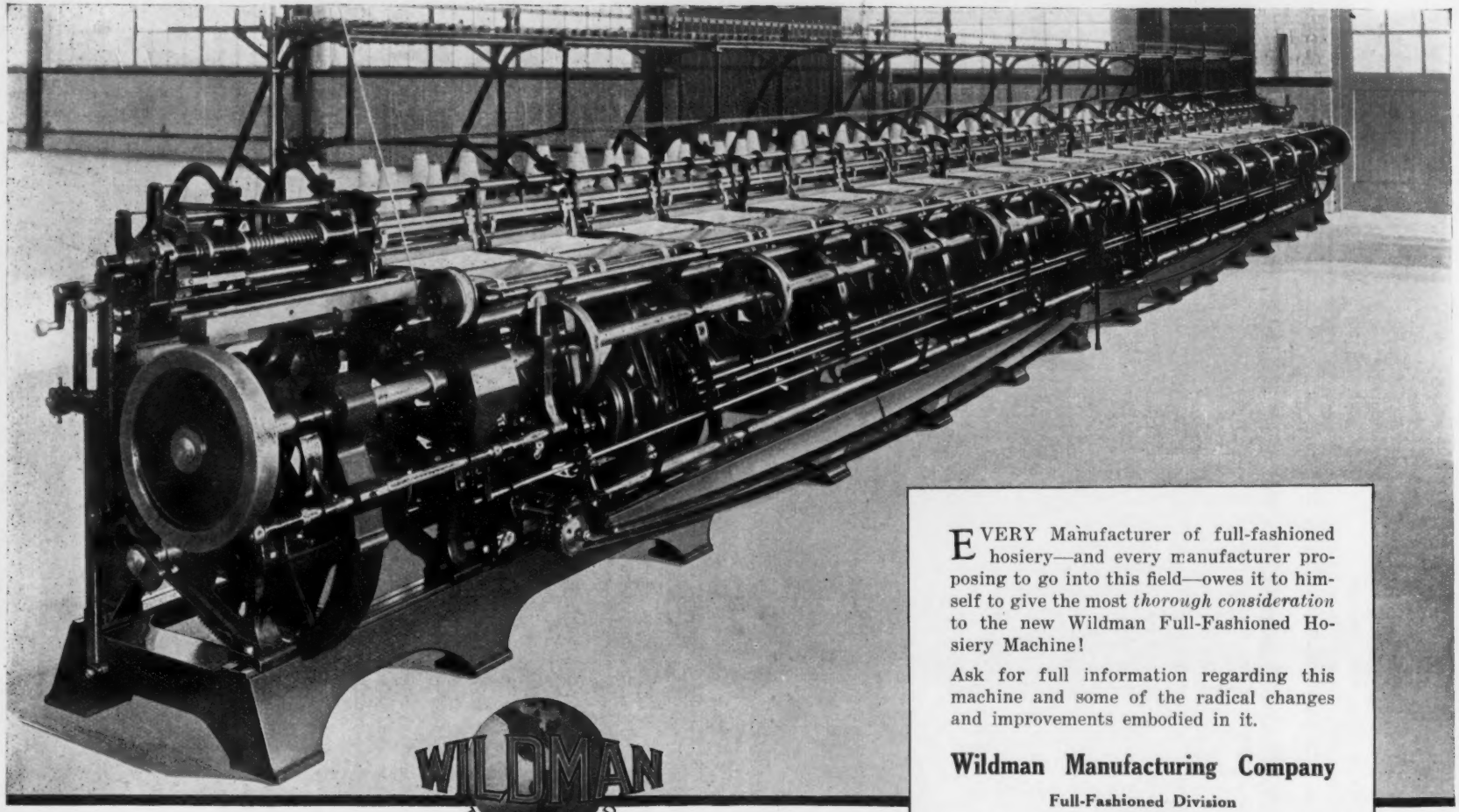
60s worsted

$$\frac{36 \times 26 \times 3\ 1/7 \times 2.25 \times 62.2 \times 1}{48 \times 560 \times 3} = 5.1 \text{ pounds of 60s worsted.}$$

Total weight = 3.7 + 4.07 + 5.1 = 12.87 pounds for 62.2 yards =

$$\frac{12.87 \times 16}{62.2} = 3.3 \text{ ounces per yard.}$$

Example 10. Calculate the yards of knitted fabric which can be obtained from a weight of 250 pounds of 12s cotton counts which has a take-up of 2.75, the frame is 22 inches in diameter and there are 16 courses per inch.



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The formula already explained is as follows:

$$\frac{\text{Weight} \times \text{Counts} \times \text{Basis}}{\text{Diameter} \times 3\ 1/7 \times \text{Courses} \times \text{take-up}} = \text{Length in yards.}$$

$$\frac{250 \times 12 \times 840}{22 \times 3\ 1/7 \times 16 \times 2.75} = 828.2 \text{ yards length.}$$

Example 11. Calculate the counts of a worsted knitted web weighing 48 pounds, 300 yards long, 20 courses per inch, 19 inches diameter frame, with a take-up of 2.75.

The formula for finding the counts is the same as that given for finding the weight except that weight appears in place of the counts:

$$\frac{19 \times 3\ 1/7 \times 2.75 \times 20 \times 300}{48 \times 560} = 36.8 \text{ worsted counts.}$$

Example 12. Calculate the weight of yarn required for a warp to the following particulars:

1250 threads of 18s cotton, 75 yards long,
875 threads of 2/40s worsted, 90 yards long.

The formula for the weight of warp is given as follows:

$$\frac{\text{Threads} \times \text{Length}}{\text{Counts} \times \text{Basis}} = \text{Weight.}$$

18s cotton: $\frac{1250 \times 75}{18 \times 840} = 6.2$ pounds of cotton.

$\frac{875 \times 90}{20 \times 560} = 7.03$ pounds of worsted,

Total = 13.23 pounds weight.

Example 13. Calculate the length of warp loom fabric produced from the following: 960 threads of 2/20s worsted, 70 pounds weight.

$$\frac{70 \times 10 \times 560}{960} = 408.3 \text{ yards.}$$

Example 14. Calculate the length of a warp made of 14s cotton folded with 200 denier artificial silk, 30 pounds weight, 240 threads.

The first step is to find the equivalent folded counts of 14s cotton and 200 deniers artificial silk.

$5282.5 \div 200 = 26.4$ cotton equivalent.

To obtain the folded counts, multiply the two counts together and divide by their sum:

$$\frac{14 \times 26.4}{(14 + 26.4)} = \frac{14 \times 26.4}{40.4} = 9.15\text{s cotton folded.}$$

This single equivalent can now be employed in the ordinary way:

$$\frac{30 \times 9.15 \times 840}{240} = 960.75 \text{ yards.}$$

Example 15. Calculate the cost and weight of a warp 300 yards long and arranged 4 threads of 28s cotton at 75 cents a pound and 2 threads of 24s worsted at $2.00 per pound. There are 1800 threads in the warp.

This is done in two sections, one for the cotton when 4/6 appears as the proportion and the second for the worsted with 2/6 as the proportion of weight.

28s cotton:

$$\frac{1800 \times 300 \times 4}{28 \times 840 \times 6} = 15.3 \text{ pounds at 75 cents} = \$11.48$$

24s worsted:

$$\frac{1800 \times 300 \times 2}{24 \times 560 \times 6} = 13.2 \text{ pounds at \$2.00} = \$26.40$$

28.5 pounds $37.88

Suppose that 50 yards of finished fabric are obtained from this 300 yard length which is quite a common proportion of length of warp to that of fabric, then the weight in ounces divided by 50 will give the ounces per yard thus:

$$\frac{28.5 \times 16}{50} = 9.12 \text{ ounces per yard.}$$

And the cost per yard is given thus: $37.88 \div 50 = 75$ cents per yard.

Example 16. Calculate the cost and weight of the warp given herewith: 1200 threads of 2/32s cotton at $1.75 per pound, 200 yards long. 700 threads of 18s worsted yarn at 2 per pound, 180 yards.

2/32s = 16s single cotton.

2/32s cotton:

$$\frac{1200 \times 200}{16 \times 840} = 17.8 \text{ pounds at \$1.75} = \$31.15$$

18s worsted:

$$\frac{700 \times 180}{18 \times 560} = 12.5 \text{ pounds at \$2. per pound} = \$25.00$$

30.3 pounds of warp $56.15

30.3 pounds = $56.15 = $1.85 per pound.

If there are 48 yards finished:

$$\frac{30.3 \times 16}{48} = 10.1 \text{ ounces per yard.}$$

$$\frac{56.15}{48} = \$1.17 \text{ per yard.}$$

Dyeing and Cross Dyeing Celanese in the Presence of Other Fibers.

By Todd B. Meisenheimer.

At the Charlotte meeting of the finishing division of the Southern Textile Association recently, Todd B. Meisenheimer, southern representative of the Celanese Corporation of America, Charlotte, N. C., discussed the above subject, and his remarks follow in part. He pointed out that dyeing and finishing all-Celanese fabrics and the cross-dyeing of Celanese in the presence of other fibers covers a great many processes and conditions, and so he dealt with the subject generally.

Celanese, he pointed out, differs from other synthetic fibers chemically in that Celanese is an ester of cellulose and acetic acid, whereas the rayons are regenerated cellulose. This chemical difference causes Celanese to have an entirely different affinity for dyestuffs from any other textile fiber, and for this reason, entirely new groups of colors for this work have been developed. He continued in part:

Dyeing All Celanese Material.

This new group of colors, known as dispersion colors, are made from some of the same bases as vat colors. Therefore, when dyed on Celanese these colors are as fast to light, washing, and uric acid as the well known vat colors are on cotton. The dispersion colors dye Celanese direct; in fact, they dye very similar to direct colors on cotton. However, the dispersion colors require no catalytic agents, such as salts or acids, for exhaustion.

Woven goods made entirely of Celanese are generally dyed on a jig dyeing machine. However, in some finishing

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plants the voiles are being dyed in open vats by fastening one selvage with strings to poles which rest across the top of the vat, the other selvage hanging at the bottom of the vat. Thus the fabric is laced in the vat and is agitated as desired by moving the poles backward and forward on the sides of the vat, very similar to the manner in which poles used for skein dyeing are moved by sliding backward and forward.

Fabrics made entirely of Celanese are also printed in designs by the general method of engraved rolls, using printing pastes made from vat colors. Printing pastes are also made from dispersion colors, but due to the oily nature of these colors it is impossible to get clean edges on the figures in some designs.

Considerable progress has also been made during the past year in the discharge printing of Celanese fabrics. This has been achieved by the development of a series of colors suitable for dyeing Celanese which are dischargeable with different reagents.

Dyeing in Combination.

Since Celanese has a different affinity for dyestuffs from the other textile fibers, it is possible to dye real silk, wool, linen, rayon, or cotton with the various groups of dyestuffs in the presence of Celanese, leaving the Celanese white or cross-dyeing it any contrasting color desired. However, to leave the Celanese white, it is necessary to select from the various groups of dyestuffs the proper colors to be used on the other fibers. That is, if direct colors are used for dyeing rayon or cotton, then select the pure direct colors that are not shaded with basic colors, as some of the basic colors stain Celanese heavily. Although the basic colors are not considered fast enough for Celanese piece goods, these colors are sometimes used for cross-dyeing fancy hosiery where the fastness of the color is considered satisfactory to washing. For cross-dyeing real silk or wool it is also necessary to select acid colors which leave Celanese unstained.

Rayon or cotton can also be dyed with selected sulphur colors in the presence of Celanese. However, in order to do this it is necessary to use as little sodium sulphide and soda ash as possible, keeping the temperature of the dye bath around 100 degrees F., or use animal glue in the dye bath if temperatures are run as high as 185 degrees F.

At this point I should mention the methods used for wetting out and desizing all-Celanese and Celanese-mixed fabrics before dyeing. The sizing used for Celanese yarn is easily removed by running the goods at 180 to 185 degrees F. in a bath made up with neutral soap and sulphonated castor oil, and this method is used for goods having Celanese warps. Celanese-mixed fabrics having rayon or cotton warps should be desized with an animal or vegetable diastase. However, if these warps are slightly sized, the soap-and-sulphonated-castor-oil wetting-out bath, as suggested for fabrics having Celanese warps, will be sufficient.

Celanese, like real silk, will not stand strong alkalis at high temperatures. However, it is possible to mercerize cotton piece goods that has been decorated with Celanese without injuring it. This can be done by not allowing the mercerization bath to go higher than 59 degrees F.

Methods for dyeing vat colors on rayon or cotton in the presence of Celanese were first developed by eliminating caustic soda and using sodium salts for reduction agents, such as sodium phenolate, sodium beta naphtholate, etc. However, methods have now been developed whereby reduced quantities of caustic soda are used to obtain satisfactory reduction of vat colors.

Cross Dyeing Fancy Half-Hose.

Celanese has also been used extensively in the knitting of men's fancy hosiery to obtain two- and three-color effects by cross-dyeing with other fibers. This particular line of manufacturing has developed some interesting problems from the dyer's standpoint, which problems I shall mention briefly, along with the methods developed for overcoming them.

As you all know, the colors recommended for Celanese are supposed to be dissolved in a boiling soap solution and the dyeing carried out in a soap bath. A great many of the hosiery mills in the South are located in sections that have hard water. As some of these mills are small, they do not have expensively equipped dyehouses having water softeners, etc. Therefore, the method of dissolving Celanese colors and dyeing in a soap bath was impossible for these mills, as the soap caused the dyestuffs to be precipitated on the goods in spots, resulting in a condition that made it almost impossible to salvage the goods. This trouble was overcome by substituting a soap made from sulphonated castor oil and soda ash, which does not precipitate under hard water conditions.

The fancy hosiery business has constantly been developing toward more elaborate designs. This has resulted in the rapid development of fancy and complicated knitting machines that require yarns to be more flexible and under perfect control at all times. Due to the fact that Celanese and rayon yarns have a tendency to take up static electricity generated by belting, etc., this condition, unless it is eliminated, causes considerable trouble in knitting certain fancy designs. It has been found that by treating the Celanese and rayon yarns with conditioning oils this treatment shunts or grounds static electricity and also makes the yarns much more pliable when knitting.

This oil conditioning of yarns and the use of fancy knitting machines which require the use of excessive quantities of lubricating oil, resulting in mineral oil spots on the goods, developed another serious problem in the cross-dyeing of Celanese-decorated hosiery. It happens that any kind of oil on wool, rayon, or cotton acts as a mordant for Celanese colors. Therefore, unless wool grease, conditioning oils, and lubricating oils are removed from the goods before the Celanese colors are added to the dyebath, then very undesirable results are obtained. I am glad to be able to say that this trouble has been entirely overcome and perfect cross-dyed effects are being obtained on fancy hosiery by formulas that require no more time than those used for ordinary dyeing methods. Briefly, the methods used are to eliminate the oils from the goods during the first thirty minutes of dyeing by dyeing the rayon and cotton yarns in a soap bath, then salting and adding the celanese colors to the same dyebath during the last thirty minutes of dyeing. Where hard water is encountered sulphonated castor oil and soda ash are substituted for soap.

Where wool grease or excessively oily goods are encountered, the goods are given a pre-treatment for twenty to thirty minutes with various proprietary products that have been found to emulsify wool grease and mineral oils.

The Yarn Market

Philadelphia, Pa., June 15th, 1928

There are two important things to report concerning the cotton yarn market in Philadelphia during the five weeks preceding this writing. One is that there has been practically no change in the fundamental situation in the market, buyers continuing apathetic with reference to making yarn commitments except for immediate use, spinners and dealers holding firmly to their ideas as to the value of yarns, with the usual exceptions to prove the rule; in other words, the market presented a dull, uninteresting appearance, with a continuance of small-lot trading in practically all quarters. The other feature is that through all of this period, yarn dealers and spinners have appeared optimistic in that they seem unanimously to feel that by the middle of July, there will be a revival of interest among consumers which will lift the market to a higher plane of activity and interest.

During the first week of the period mentioned, there were no extraordinary developments. There were reports of under-selling, coming, it was explained, from the liquidation of some local stocks; but the yarn makers insisted that their prices, to which they were adhering, were higher than those given generally as the market quotations.

There was a continued lack of interest throughout the second week, with none other than small-lot business, buyers apparently intending to stretch out current supplies for a while. Spinners remained firm, however, and appeared not to be discouraged at the small turn-over resulting from an especially active campaign by their salesmen. They felt that by mid-July, users will come into the market regardless of the cotton outlook; but realized that the influence of cotton rates in the meantime would affect the position of prices whenever buying was resumed on a more active scale.

Ending June 3rd, the next week brought no change, either in prices or transactions; and this lack of fluctuation one way or the other in rates was considered an omen of stability so far as values were concerned. It seemed a definite result of the spinners' extended campaign for holding to yarn prices representing more nearly replacement values than those offered in connection with the small orders coming through.

While June is regularly a dull period, the situation in the fourth week emphasized this condition this year. At the same time, a good sign was that although the current business is being filled mostly from stocks, it appears there is little surplus stock actually in the market, which will mean better sailing when business develops on a more ambitious basis. The market still anticipated late July as a period of activity, and, while the situation will always be tremendously affected by cotton, their optimistic reasoning seemed rather justified.

Expectation of activity in July seemed to increase in the fifth week, in which this is written, and because of this, all phases of the market seem now to be marking time. Stabilization of values continues, however, and on the business done, there is heard no complaint of collections. It was evident that the spinners, especially those making carded yarns, had been able to effect their program of making yarns largely against orders, and this seemed a healthy condition. Of course, there were minor concessions made on current transactions in order to maintain contact with customers, but basically speaking, the position of the spinner appears firmer. It is felt by various factors that yarn users generally find themselves with unusually low stocks, and with a limited amount of yarn on hand, it is felt that a revival in mid-July will be especially healthful from the standpoint of the spinners.

Philadelphia quotations on June 15th follow:

Single Skeins.

4s to 8s	31½	10s	32
12s	32½	14s	33
16s	34	20s	35
24s	37	26s	38
30s	39		

Single Warps.

10s	33	12s	33½
14s	34	16s	34½
20s	35 @35½	26s	38½ @39
30s	39½ @40	40s	48

Carpet and Upholstery Yarn in Skeins.

8s and 9s 3—4 hard white warp twist	31½
8s and 9s tinged tubes	30
8s 3—4 hard twist waste	29

Two-Ply Skeins.

8s	32	10s	32½
12s	33	14s	33½
16s	34	20s	35½ @36
24s	37½	26s	38½
30s	39 @39½	40s	47

Two-Ply Warps.

10s	33½	12s	34
14s	34½	16s	35
20s	36 @36½	24s	38
26s	39	30s	39½ @40
40s	49		

Frame Spun Carded Yarn on Cones.

8s	31½	10s	32
12s	32½	14s	33
16s	33½	18s	34
20s	35	22s	35 @35½
24s	35½ @36	26s	36½ @37
30s	38 @38½	40s	47½
30s double carded	40	30s tying in	37½

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	43	20s	46 @47
24s	48 @49	30s	51 @53
40s	55 @57	50s	59 @61
60s	65 @67	70s	75 @77
80s	85 @88		

Single Combed Peeler Yarn on Cones.

18s	43	24s	46
30s	50	36s	52
38s	53	40s	54
50s	61	60s	67
70s	76	80s	86

Mule Spun Carded Yarn on Cones.

10s	36	12s	36½
14s	37	16s	37½
18s	38	20s	38½
24s	40	26s	41
30s	42	40s	50

Mule Spun Combed Peeler Yarn on Cones.

10s	44	12s	45
14s	46	16s	47
18s	48	20s	50
22s	51	26s	52
28s	53	30s	54
36s	57	38s	59
40s	60		

Southern Representative for Cooper.

G. W. Morton, 1002 Magnolia St., Greensboro. N. C., has been appointed southern representative for Charles Cooper Co., Bennington, Vt., manufacturers of knitting machinery and needles.

Open Loom and Reed Plant at Augusta.

Southern Loom Reed & Mfg. Co., with plants at Campobello, S. C., and Greenville, S. C., have just opened an additional plant at 741 Telfair St., Augusta, Ga., for service in that section.

JUMBO CONES

LEESONA
REG. U.S.A. AND OTHER PRINCIPAL COUNTRIES

WINDING SYNTHETIC YARNS FOR KNITTING

No good manufacturer of knit goods would even contemplate knitting from a small supply like a cop or bobbin, for two fundamental reasons: first, the supply would be too small, and second (and more important), in drawing off from knitting supplies of small diameters, the material must unwind rapidly, due to the fact that one wrap represents but a very short length of yarn.

The ideal knitting package of synthetic yarn is a cone of 5¾" traverse, built on a large-diameter cone tube, as represented by the "Universal Jumbo" cone wound on the "Universal" No. 50 machine.

The empty cone tube has an average diameter of 2⅞", and the average diameter of a three-pound cone when wound is 5⅝". The three-pound cone represents the maximum recommended for synthetic yarns, and naturally cones of smaller diameter and less weight may be wound, if desirable.

Starting with this large-diameter cone, the wall of synthetic yarn on a package containing three pounds net is but 1⅜". Glancing at the illustration above of the "Jumbo" cone, you will readily appreciate the assurance of even tension when knitting from a package with large circumference, and with none of the impediments to delivery common to bobbin types of winding.

The "Jumbo" cone, the latest product of the "Universal" No. 50 winder, is the result of exhaustive study and careful development by the Universal Winding Company, collaborating with the manufacturers of synthetic yarns, and with the knitters of this material.

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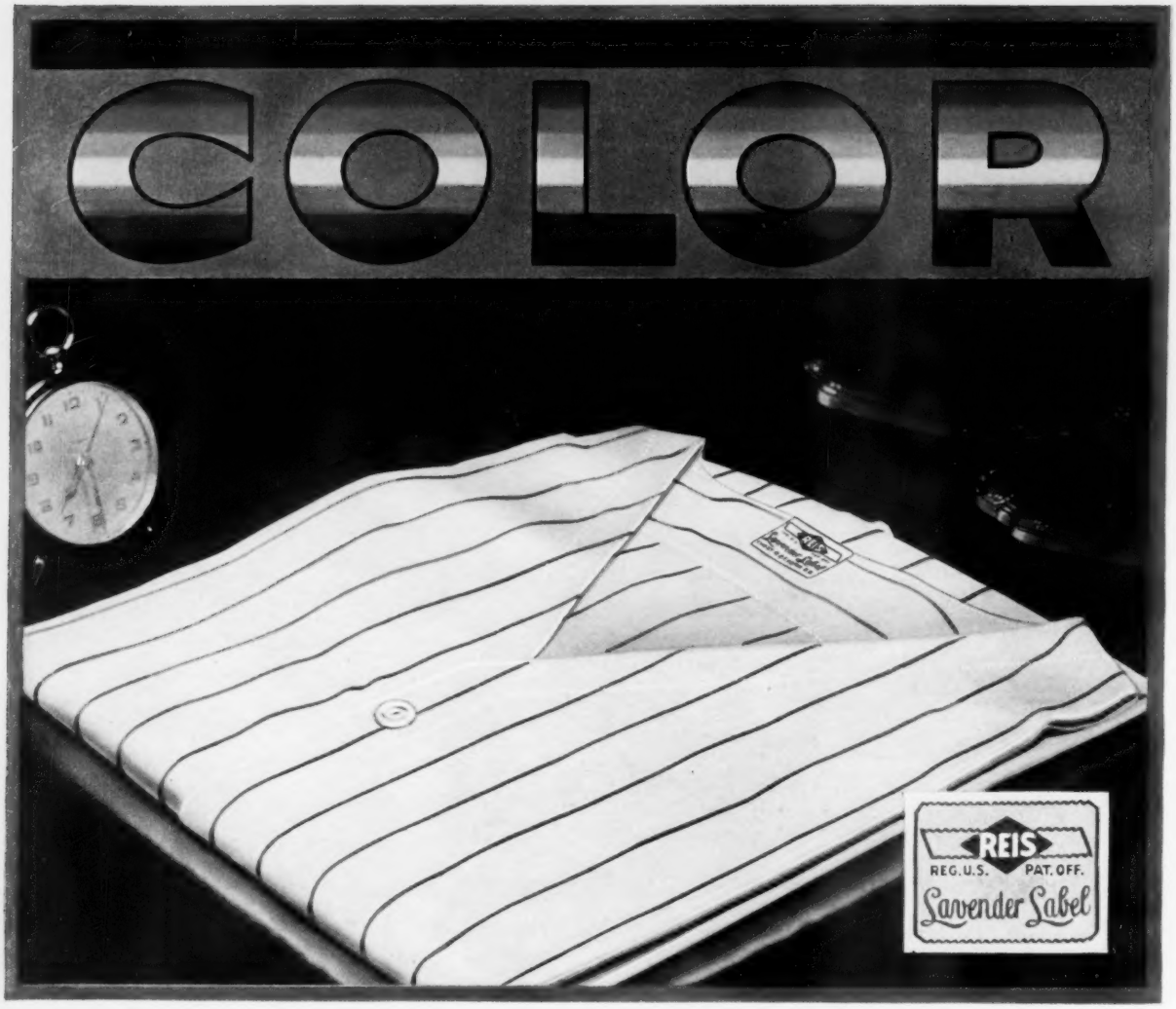

THE MASTER SALESMAN

COLOR in men's underwear was practically unknown a few years ago, but Robert Reis & Company, one of the best-known men's underwear manufacturers in the country, had the courage to introduce it.

To-day, 75% of the "Jimpants"* (men's athletic drawers) they sell are in color and the demand for color in undershirts and union suits is increasing. The introduction of style and color has traded up the unit sale price 50% at least, and tripled the volume of business. Robert Reis & Company express the opinion that style and color will become as important factors in men's underwear sales as they are in men's shirts and pajamas.

Color and style being such important factors in their sales, Robert Reis & Company naturally insist upon the best obtainable dyes and dyeing service.

Fast-to-bleaching shades (vat colors), the fastest known to light, washing, and all color-destroying agents, are applied under pressure by the Franklin Process Companies, assuring thorough penetration of the color, and, consequently, brighter, more durable shades.

By taking full advantage of our many services, customers of the Franklin Process Companies effect important savings, often cutting days and weeks from the time ordinarily required to get a new styling on the market.

*Reg. U. S. Pat. Off. by Robert Reis & Company

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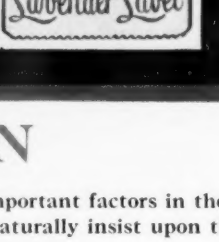

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They will deliver freely, either by rotation or over end, substantially lowering winding costs

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The A B C of Hosiery Dyeing

Developed Dyestuffs and a Discussion of Some Experiences of Earlier Days in Applying these Colors.

Part Fourteen.

By Noel D. White.

THERE is a line of dyestuffs that was largely used in the past, and probably is used to a great extent even today, but of which there is not much discussion. At least that is my impression, and yet it used to be quite an important line. It may be that some of them have been displaced by the sulphur and the vat colors, but it is quite proper that mention of them should be made in this series, and we will discuss them at this time.

Out of this line of dyes Primuline is the first the writer came in contact with, and will be treated first.

Whether it is much used at present I do not know, but it used to be quite a "big fellow" some years ago. With it could be dyed a large number of shades ranging from yellow and light tans through oranges, red, claret, and up to the darkest maroon. It could be shaded to match any color desired in that line. Colors dyed with Primuline were quite fast to washing, scouring, falling and cross-dyeing, but not much could be said about their fastness to light, especially the reds. In a short time, on exposure to light, they would become rusty; and for that reason, for work that had to be exposed to sunlight, Primuline was not much favored and some developed red colors took its place.

Primuline colors properly developed could be so resisted that they would stand boiling off, and cross dyeing even with black. It dyes cotton, silk, and rayon about the same shade—and could be used for multi-color effect on hosiery. For dyeing cotton yarn the ordinary procedure as for all the substantive dyes is followed: from 10 per cent to 30 per cent Glauber salt, according to the amount of dyestuff used, is added to the bath and boiled for one hour, then rinsed, preparatory to diazotizing and developing. Rayon is dyed in the same way.

For silk, an addition of acetic acid is necessary—from three per cent to four per cent is the amount used. The writer in dyeing silk yarn proceeded as follows: A bath was made up with the proper amount of water in the ratio of 1 to 30, raised to 120 degrees F., and the needed Glauber salt and dyestuff dissolved and entered in the bath. The silk yarn was turned in this bath five times, then raised on racks and the bath heated to 160 degrees F., three per cent acetic acid added, the goods turned in it five times, and raised again to boil up the bath. Five turns more, another boil to insure level dyeing; in twenty turns all told, the goods were dyed, and after a rinse were ready to be diazotized. This was done in a bath prepared with three per cent nitrite of soda, and five per cent sulphuric acid in cold water for half an hour with no less than five turns, then the goods rinsed in two cold waters, and immediately entered in the developing bath. This was prepared according to the color wanted, with the proper developer.

Phenol, Resorcine developer, beta naphtol, meta-toluilene diamine, and meta-phenilene diamine were the principal developers we had. There was a line of prepared developers called: Developers A, B, F, H, Z, also oxamine developers for different shades, and many others which could be used, prepared ready to use. Each had its purpose, and were all good—but we found that some of them could not be kept for any length of time in good condition. As caustic soda was mixed with the developer, temperature and atmospheric conditions affected them more or less, and it was found best to buy the unprepared developers and add the alkali at the mill when needed.

Some Developers.

We made use of four developers, namely: phenol for yellow, resorcine for orange, beta naphtol for red, and meta-toluilene diamine for maroon; and devised a way to mix some of them together to arrive at a given shade.

As resorcine, beta naphtol, and the diamine need an alkali to insure proper solution, they are well adapted to be mixed and used together. Resorcine takes twice its weight of caustic soda; beta naphtol takes from 1/3 to 1/2 its weight, and the diamine its own weight of soda ash. The amount of developer and caustic or soda ash are weighed out and stirred in water, boiled for a few minutes, then entered in a bath of cold water and the goods worked in it for half an hour, then washed.

In mixing the developers to arrive at a certain shade care must be exercised to mix in the proper proportions. As the diamine developers are much stronger in tinctorial power, and develop quicker than the resorcine or the beta naphtol, if used in the same proportion the latter will not show up at all. The proper proportion is for one pound of the beta naphtol five ounces or less of the diamine should be used. In the case of resorcine, one half or less of beta naphtol is enough.

Primuline developed with resorcine gives a bright orange color. If a darker or redder orange is wanted, a little beta-naphtol added to the resorcine will do it. A few experiments in the laboratory will determine the right amount to use. The same way with the diamine developer. Primuline developed with beta naphtol will give a bright claret red; if a cardinal is wanted, a few ounces of the diamine dissolved with the beta naphtol will turn the trick.

When a shade could not be arrived at with Primuline alone, we added to the bath other dyestuffs suitable for diazotizing and developing. There are a number of substantive dyes well adapted to be mixed with Primuline for shading purposes. Of course, they have to be suitable for developing. Acid violet, diazo and developed blacks and colors are suitable, and it is surprising how little of any of this dyestuffs will affect a shade dyed with Primuline. With mixed developers and a combination of dyestuffs, quite a range of shades were designed, but any dyer at-

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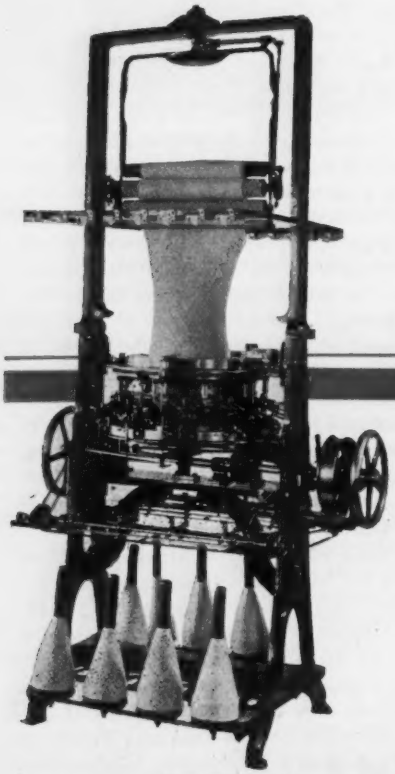

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tempting to do that with Primuline will surely have to do a lot of experimenting. There is nothing to guide him, and he cannot see the results until after the developing has taken place and most likely the shade attained is far from what he wanted. To be sure, once a formula is arrived at, the work is easy, and repeat orders are easily taken care of, but as shading Primuline is such a trying proposition it is no longer advisable. Primuline dyes a pale yellow, and cannot be gauged as to depth of shade until after it is developed; when shaded with other dyes it loses its identity, being covered with the shading dyes, and that is what makes it so difficult—except for straight colors like yellow, orange, red and maroon.

Naturally Primuline not being fast to light, other substantive dyes have come into the market to supplant it. Many diamine and diazo colors can be made fast by diazotizing and developing on the fiber, and as they change but little, these operations are more easily controlled.

In experimenting and matching in the laboratory, two samples should be made for the same shade. One should be kept without developing so as to have it for judging the difference which the developing has brought about in the shade, and when the correct formula has been obtained a sample of the undeveloped shade should be kept in a dark place for future reference.

One of the precautions to guard against is to let no light strike on the goods while they are being diazotized and developed. The room where these operations are conducted should be made as dark as possible because light will destroy permanently the dye during diazotization. After the goods are entered in the developing bath there is no more danger.

As an example of how fast some developed colors can be made, I will give an instance of what we did some years ago. In the spring of 1917, after the declaration of war, a neighbor called to see me. He wanted to make a flag to hang across the street and he wanted me to dye the cloth. I said I would, thinking he had some wool cloth, and I could dye it in a bucket; but he wanted *some flag*—it had to be the width of the street, and the length in proportion. Patriotic? I should say he was. (He had three boys in the field!)

When he gave me the cloth, it was cotton. I dyed the red with a diazo scarlet and developed it with beta naphtol. I put ice in the diazotizing bath to help it along. (Putting ice in the diazotizing bath to lower the temperature increases the fastness on the developed color considerably). The blue I dyed with a diazo blue, and developed it the same way. As a further precaution, I soaked both colors in a solution of bluestone 1½ per cent at 120 degrees F. for one hour. The theory of this is that the bluestone after treatment leaves a film of copper on the cloth, and this protects it from the action of the light.

We made the flag. I was afraid the rain would bleed the blue into the white stars, and the red into the white stripes, but that flag was hung on a rope (I might say a cable) stretched across the street, and tied on the top of two opposite trees, high enough for traffic to pass under, and was left hanging until long after the Armistice, and the colors on that flag were as good, after all it stood from the weather, as any flag around here.

If any of my readers traveled the highway from Needham Heights, (the home of Carter underwear), to Newton Upper Falls, in Massachusetts, during the war—they could not miss seeing that enormous flag stretched across the street.

Dyeing with developed colors is a much more simplified affair now, the colors change but little in developing, and can be easily checked by keeping a pattern of both before and after treatment for reference. As reds are the most likely to be wanted on account of the absence, up to date, of sulphur red dyes I must mention a line of substantive colors made by several forms ranging from orange to maroon, and developed with beta naphtol. A Primuline or developed dye color properly developed can be resisted to stand boil off and cross dyeing, as I mentioned.

The resisting process is carried on as follows: The dyed goods are entered in a bath made up of 20 per cent tannic acid at the boil for one hour; then in another bath with 5 per cent tartar emetic or antimony salt, antimony potassium tartrate and 3 per cent tin crystal dissolved separately. In dissolving the tin crystal, muriatic acid is added a little at a time until the milky solution becomes clear; the bath is stirred up and the goods worked in it for half an hour, and then washed. This operation is repeated, using the same baths with one-half the chemicals added. The goods are now well washed and soaped.

Goods so treated will resist absorption of any dyestuffs except basic dyes, which cannot be used with resisted colors.

Full-Fashioned Trends in Philadelphia.

Certain of the Philadelphia civic bodies and financial interests are manifesting some concern over what is declared to be a lessening of the city's industrial structure. There is interest especially in the moving of some full-fashioned hosiery mills to other fields, notably to villages and small towns some miles remote from Philadelphia. Since the first full-fashioned mill was established in Phoenixville some months ago, the plant of the Ajax Hosiery Mills in Philadelphia has been removed to the buildings of the Phoenixville Hosiery Mills, as a subsidiary of the Ajax, the last of the equipment being transferred last month. It is planned to have eventually around 100 full-fashioned machines there.

Boards of trade and chambers of commerce in Pennsylvania towns are making attractive offers to hosiery manufacturers, and it seems likely the Lincoln Hosiery Corporation will remove from Philadelphia to Pottstown, 40 miles out, where there are a few underwear and seamless hosiery mills, but not a full-fashioned establishment. Most of the full-fashioned expansion in Pennsylvania is in towns and villages some miles remote from Philadelphia, and for the last few years new mills have been springing up in Bucks and Montgomery, two contiguous counties. The movement to the local countryside seems to have enmeshed some few manufacturers considering southern sites.

A bank which conducted an investigation as to the reason for a few industries forsaking Philadelphia, attributes the as yet insignificant movement to high taxes, rentals and production and living cost.

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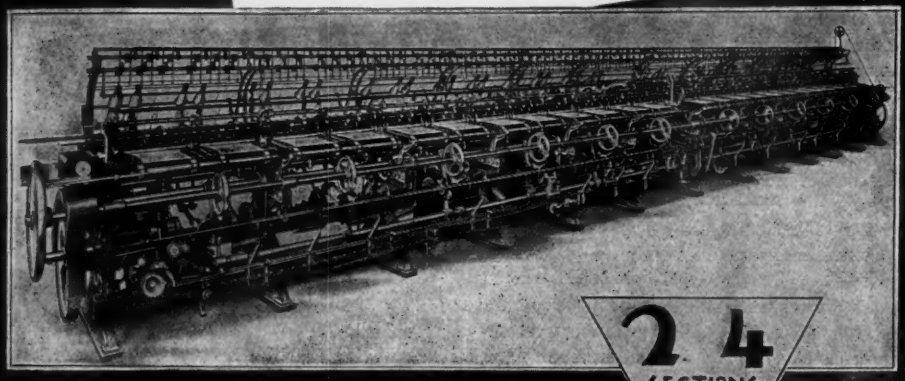


24 SECTIONS ALL GAUGES

FULL FASHIONED HOSIERY MACHINES

Seaming, Looping and Inspecting in a Fine Gauge Seamless Mill. (Part 2.)

EDITOR COTTON:

In the February number, in "Knitting Kinks", you published a letter from me in which I told the readers of a visit I had made to my friend Tom Smith, along with another man who was planning to build a new mill for making ladies' fine gauge seamless silk hose. In that letter I told of a conversation between this man and Tom Smith, in which Tom, who has manufactured this product successfully for years, gave this man some ideas as to laying out the mill and avoiding seconds.

It happens that the other day my friend Jones came by again and we ran down to Pineville to pay a second visit to Tom Smith to discuss with him some of the problems pertaining to Jones' new fine gauge seamless plant, and I made some notes of the conversation, which I am passing along for the interest of the readers of "Knitting Kinks".

Jones began by saying:

"Tom, you gave me some of your ideas about knitting, now I would like to have your views on seaming and looping. What about the construction of tables?"

"Well," said Tom, "there are several manufactured looper and sewing machine tables on the market, and they are all good, and have many convenient compartments, but my experience with compartments is, that they make a mighty good place in which to dispose of a lot of junk and a hiding place for bad work. The most important thing about a table is its sturdiness, its freedom from vibration and a lot of noise. These are the things that disturb and affect the nerves of the operatives. The quiver of the looper points affects the eyes and cause headache, while the vibration and roar of a sewing machine is hard on the nerves. Of course the tables are no steadier than the floor. The floor should be firm and the tables should be firmly bolted to the floor. The best construction for tables is rigid frame work, mortised and bolted, using bolts with jam nuts, with the sub-runners bolted to the frame work and the top floor of tongue and groove hard wood laid in cross-section and highly polished and finished."

Jones inquired of Tom if he recommended single and double tables, to which Tom replied, "It depends largely upon the natural light. If the room is well lighted and the tables run east and west, I prefer double tables, since a double table economizes floor space. If the tables are located near the east or west side of the building, it is preferable to have single tables with the back of the operatives to the windows nearest to them."

"I see your point," said Jones. "Now tell me how fast

We invite our readers to make use of this departmentfor the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any partcular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

the sewing machines should be run; as fast, I presume, as the operatives can keep up with them."

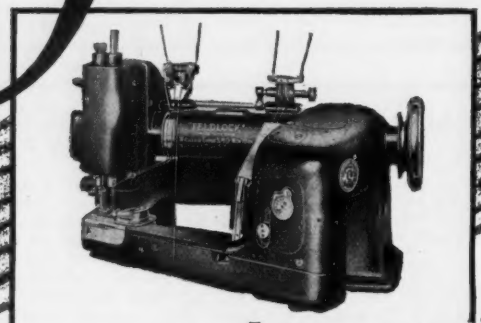
"No," said Tom. "It is not good practice to speed the machine beyond the speed recommended by the maker, and from this maximum speed on down, consistent with the speed of the operator. More bad work is caused by too much speed on the machines than any other one thing. There is no time gained by too much speed, as the time lost in making repairs on the machine will offset any gain in production in the long run. Too much speed greatly reduces the life of the machine. And, while speaking of the life of the machine, let me remind you again of the importance of good oil, properly applied.

"The sewing machines are provided with step-down pulleys on the transmitter to regulate the speed, which should be changed to suit the operator as her skill develops. Step-up drive pulleys should be arranged for the loopers so the speed of the machine conforms to the speed of the girl. If this is not done there will be a great deal of thread wasted between the stockings, which is one of the prevailing extravagances in most mills. In some mills a point is taken out of the dial at regular intervals, a little more than the width of the stocking to be looped, to force the girl to place the stockings on the machine the right distance apart. A learner should be developed on a slow running machine. If she runs a fast machine she will practice on a standing dial, and when she tries to loop on a moving dial she finds the difference a handicap. Each machine should be provided with a foot pedal for starting and stopping the machine to take care of a difficult stocking to loop, as the girl will lose time turning loose her finger-hold on the stocking to stop the machine and picking it up again in the right position to put on the points."

"There is a difference of opinion among knitters as to the number of points per inch the looper should have for a given gauge stocking," said Jones, asking for Tom's opinion.

"This is very important," said Tom. "If the best results and the highest production is obtained the fabric

The Feldlock



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WRITE OUR HOME OFFICE FOR SAMPLES MADE ON THE FELDLOCK, OR SUBMIT YOUR OWN FABRICS FOR SAMPLE PURPOSES

should fit the points. The rule for figuring the number of points per inch or gauge of the looper is to divide the circumference of the knitter cylinder into the number of needles on the cylinder, which will give the needles per inch of knitted fabric, and this is the number of points to the inch which the looper should contain. For example, your 3½-inch, 260-needle cylinder is figured this way:

260 ÷ 3½ × 3.1416 = 24-points.

"Now this is right for general use, but today when we are knitting light yarns and packing the stitches, it is easier to loop this fabric on a 26-point machine, as any stretch of the looper line tightens the stitch still more and makes it more difficult to push on the points."

"I notice," said Jones, "some girls loop with the right hand following the rotation of the dial; others with the left hand against the rotation of the dial, while still others use a combination of the two methods. I would like to ask which you consider the better method."

To this question Tom looked at Jones kind of devilish and said:

"Jones, I know you are enough of a countryman that you had rather shoot a rabbit running from you than toward you, and being right-handed, you could peel a horse apple faster with your right hand than with your left. Then I would say, teach the girl the easiest, most natural way, and she will have no trouble."

Jones asked Tom if he had any other ideas about teaching a looper.

"Yes," Tom began. "There is entirely too much time and money wasted teaching loopers. The trouble is poor instructors. The best instructor should be the overseer and the most important lesson is the first lesson. The overseer should ravel and explain thoroughly a piece of knitted fabric to the learner, pointing out the difference between the needle wale and the sinker wale so she can distinguish between the two. A pick glass or magnifying glass is helpful in this explanation. When the girl has the stitch well fixed in her mind then she only has to follow a straight course and put the stitches on the points. There should always be a looper loose course at the looper line for a guide. She should have little difficulty in turning the corners. She can begin by pressing a few stitches at random on the points just to the right of the first corner, then put the first stitch next to the corner on correctly and proceed along the line for about half the width of the back side; then revert back to the corner and slowly remove the one stitch adjoining the corner stitch and put the same hole on top of the corner stitch and proceed with the other stitches as on the back for about one inch. Then take up the back side and continue to the last corner plus a stitch, then complete the front side by pulling off the last stitch on the back and placing it on the front to complete the operation. With this method of instruction I have seen girls learn to loop perfectly the first day."

At this point Jones asked Tom what looper menders should run, to which Tom replied:

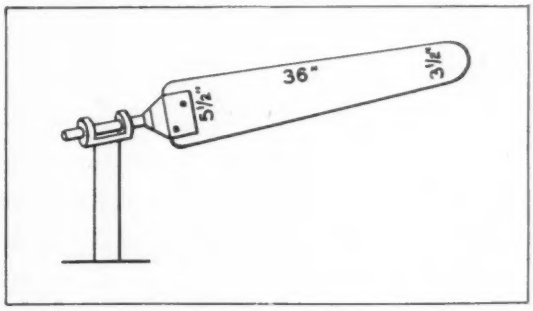
"This depends largely on the looper fixer. The old saying that 'An ounce of prevention is worth a pound of cure' is very applicable to a looper fixer's job. You notice a successful aviator thoroughly inspects his machine before he takes to the air. The same principle should be applied to a looper. A looper fixer by inspecting his machines several times a day, seeing that the stitch mechanism is properly set up, and that there is no burr on the point of the needle and that the trimmer is cutting clean, can prevent most all the looper menders. With this method the looper menders should not exceed one per cent."

"Have you any special plan for teaching back seamers?" asked Jones.

"Yes," said Tom. "Teaching a girl to run a sewing machine is very much like teaching her to run an automobile. She must learn to start and stop the machine. She must learn to touch the accelerator or foot pedal lightly to make the machine run slowly. It is best to teach her to use her feet first so her feet don't run away with her hands and head. I usually spend a few minutes drilling a girl on an empty machine. Then I get up an armful of waste which can't be backwound, for her to practice on. She can't make any mistake on this material, and can thus avoid criticism, and keep her nerves. In a very short while she has acquired that confidence which enables her to do a good job of it."

"That covers the knitting room, with the exception of inspector equipment," said Jones, "and I would like to know what you recommend for this."

Tom picked up a scratch pad and began to explain.



"I make my inspector boards out of 3/4-inch hardwood boards, preferably birch, which takes a polish well. The dimensions of the finished boards are: Length 36 inches; width 5½ inches × 3½ inches.

"To the end of this board is bolted a cast iron spindle, a cast iron bearing mounted on the top of a wood post cut on an angle to tilt the board is the bearing for the spindle. All the stock of the bearing is cut out except about 1/2-inch at either edge which reduces the friction on the bearing. The post is fastened to the floor with two cast iron brackets. The board and stand complete is represented in the accompanying sketch. An inspector stand built on this plan is very sturdy and will wear indefinitely."

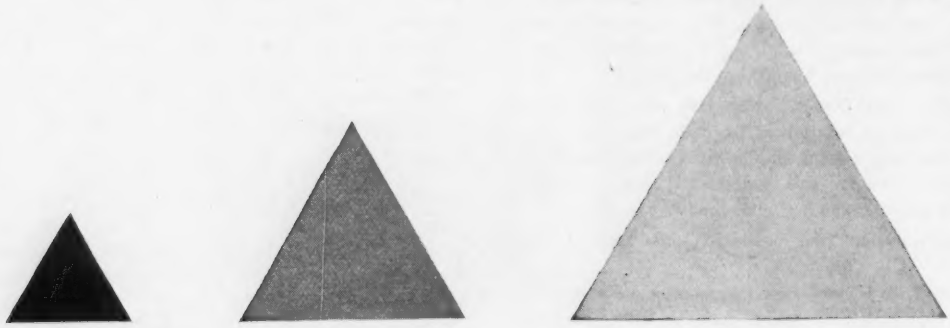
We had greatly overstayed our schedule. Tom showed a keen interest in Jones' new mill and expressed pleasure in contributing anything he could to its success. Jones thanked him and expressed a desire to discuss with him at some future time some of the problems of dyeing and finishing.

T. O. (N. C.)

National Announces New Orange.

National Aniline & Chemical Co., Inc., 40 Rector St., New York City, have added National Solantine Orange 4G Conc., to their line of fast-to-light direct dyes. The company states this is especially adaptable for use on cotton and rayon both as a straight and as a shading color, and is not limited to combinations of the Solantine dyes.

VALUE OF READING FULL-FASHIONED KNITTING MACHINES AS COMPARED TO THE VALUE OF THEIR PRODUCTS



1 UNIT
3 LEGGERS 1 FOOTER
PRICE 100%

VALUE OF
1 YEAR'S PRODUCTION
505%

VALUE OF
15 YEARS' PRODUCTION
6.550%

These are not figures taken from some "special" unit operated by factory-trained knitters; but are based upon the *average* production of any or all Reading Full-Fashioned Knitting Machines and the *average* gross value of the stockings they turn out.

Here is ample proof that the feature which makes Reading Machines the most profitable to their owners is not the number of courses per minute but the uninterrupted production of "firsts" week after week—year after year.

Textile Machine Works, Reading, Pa.

READING

FULL-FASHIONED KNITTING MACHINES

Wants Information on Routing Fancies Through the Mill.

EDITOR COTTON:

I would like to see in COTTON a discussion of the ways and means of routing fancy half-hose and misses' goods through a mill. Here are some of the points I would like to see taken up:

How patterns are gotten out; what sizes to make; how to cover with yarn sufficient to make specifications; how to line up the machines to knit the correct proportions by colors and sizes and how often can they be changed efficiently.

Should half-hose, fancies and misses' fancies be changed by the regular fixers, or by a special changing crew? How are the knitters taken care of during these changes?

I would particularly like to have this covered for a mill going to the retail trade. For a jobber to select a set of patterns, give a definite order for so many dozens and route them through the mill is fairly easy, but on the other hand, when catering to the retail trade, there are many things to consider. The patterns are sent to all sections of the country. Some patterns sell better than others. How can we stock in anticipation of demand? How long should a pattern be kept, and when should a pattern be definitely closed out?

This is a large field for discussion, and some good planning and production man, I am sure, has the information if we can get him to furnish it.

CONTRIBUTOR NO. 4027.

The Buttless Turn-back Sinker in Sinker Reverse Plaiting.

EDITOR COTTON:

In the knitting of seamless hosiery having a sinker reverse plaited pattern and particularly where a rough yarn is used as the plaiting yarn, it is practically impossible to knit a clean unbroken pattern without the use of some form of turn-back sinker. The usual turn-back sinker, with a butt, in my experience, besides not turning back the yarn as well as the buttless turn-back, makes a rather noticeable turn-back line in the fabric. The buttless variety does not do this unless set in too far.

The buttless turn-backs, as they come from the manufacturer, have a slight bend near the end of the shank for the purpose of keeping their adjustment, once they are set. Unless a rather extreme bend is placed on them they are constantly going out of adjustment, particularly after the machine is run a short period, and the lint gets between the radial adjustment cam and the sinkers.

If an extreme bend is placed on the buttless sinkers, two troubles are certain to turn up to annoy the fixer. The first is, because of the bend, the sinker is twisted so close to the adjoining needles that the yarn is pinched between the needle and sinker, causing cuts in the fabric. The second is, if the pattern contains numerous buttless sinkers, with a hard bend, these sinkers exert sufficient force on the outside sinker ring to move it, thereby throwing the sinker slots out of alignment with those in the inside sinker ring.

A better method of placing tension on these sinkers is to remove the bend and place a small center punch in the center of the shank near the end. This punch mark should not be too deep. The depth can be best determined by experiment. These center punch marks can be placed on by hand, which is a rather inaccurate way of doing it, or a foot-operated machine that does the job quickly and with precision can be constructed out of material and parts found around any hosiery mill.

In the accompanying sketch, Fig. 1, is shown a machine of this kind. The operation of this machine is as follows:

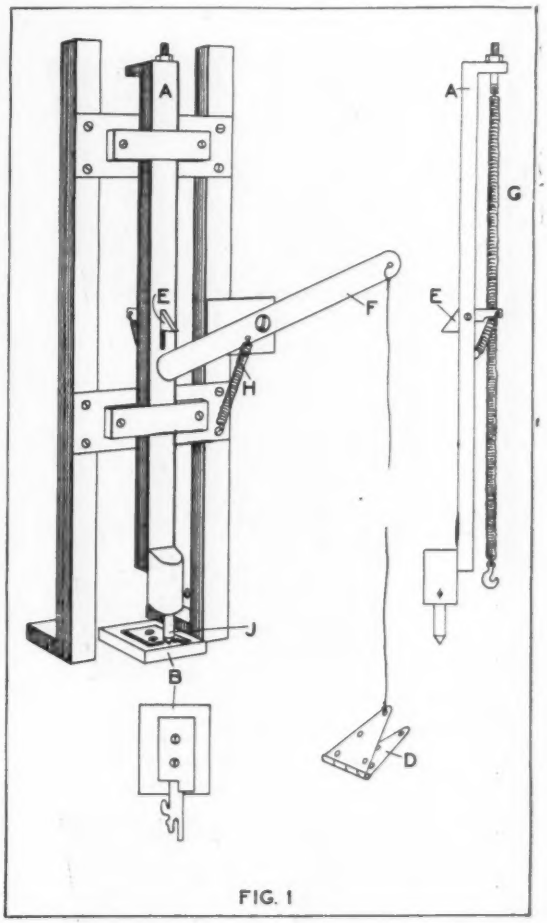


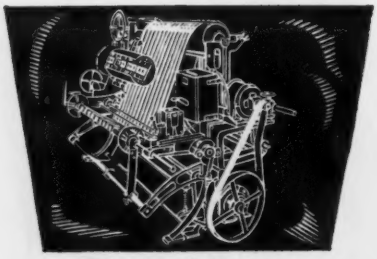
FIG. 1

The hinge *D*, used as a tread, is slightly depressed, the shank of the buttless turn-back is inserted on the anvil *B*, the hinge *D* is further depressed until a point is reached where the part *E* slides over the end of lever *F*. Then *A* is brought down by spring *G* and the sinker is indented. The hinge *D* is then released, the lever *F* is brought back to its former position by spring *H*. The part *E*, as shown in the illustration, is so constructed as to move out of the way of *F* on *F*'s return.

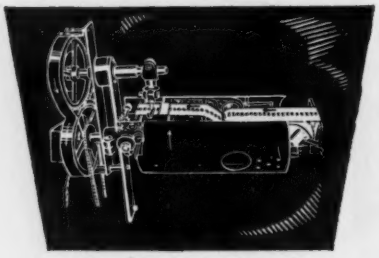
The machine should be worked the first few times without a sinker being placed in it in order that the punch *J* will make a slight depression in the anvil *B*.

On some knitting machine cylinders it will be found that the buttless sinkers in one part of the cylinder require a closer adjustment in their relation to the needles than in another part of the same cylinder. Obviously, two different adjustments cannot be obtained with the same radial adjustment cam, in which case the buttless turn-backs requiring the least radial adjustment are set with the cam,

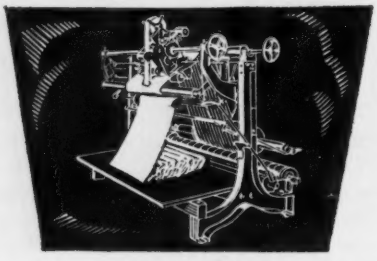
The Machine Age of ...how Kaumagraph



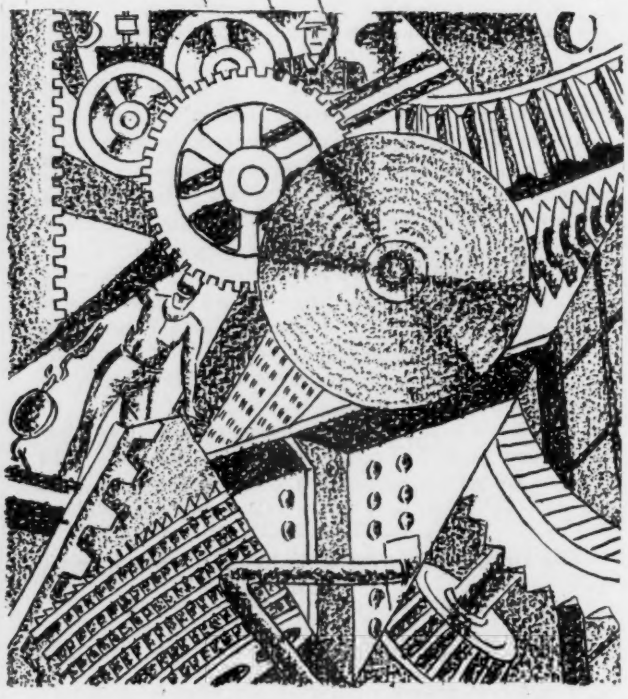
The Transferotor
A patented attachment for applying Kaumagraph Transfers automatically to piece goods, as trademarks or yard numbers.



Yardage Marking Machine
Makes possible the marking of the yardage of every class of textile—even rougher faced goods such as woolens, tweeds, etc.



Model A. R. Machine
To take cloth from loose fold.



EVEN by hand, it is a quick and easy matter to apply trademarks with Kaumagraph Transfers. For example, with Kaumagraphs a deft operator can apply from 960 to 1200 trademarks an hour.

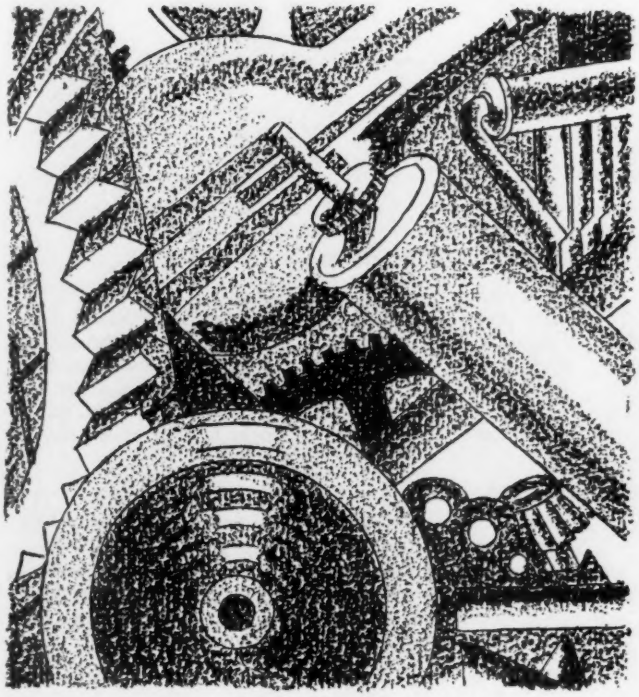
But even with such speed we were not satisfied. We wanted to make the application of trademarks still easier. So we invented machines to do it.

Machines that speed up hosiery marking to 150 dozen pairs an hour. Machines that place the mark along the selvage without increasing the handling expense — by combining the marking with another operation such as measuring, rolling, winding or doubling.

Machines that trademark the cloth while it travels at from 50 to 100 yards per minute. Machines that trademark the cloth at any intervals desired, from half a yard up. Machines that can make two parallel lines of marks.

Machines that apply marks to piece goods either as trade marks or yardage numbers. Machines that mark even rougher goods such as woolens and tweeds — with a legibility hitherto impossible. Machines that mark tex-

Applying Trade-marks



brought it about!

tiles, hosiery, garments, underwear, leathers, skins, etc., etc.

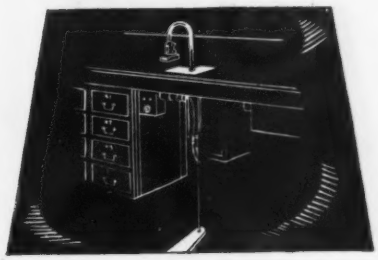
Such a comprehensive development by Kaumagraph has made this indeed the machine age of applying trademarks. For thousands of manufacturers, jobbers and retailers it has made possible the trademarking of their product by eliminating the cost problem, the labor problem, the time problem in connection with the application of trademarks.

Kaumagraph's Department of Machine Designing which brought to pass the development of this Machine Age in applying trademarks, stands ready to design special apparatus for applying either Kaumagraph Transfers or anything else in connection with the matter of identification.

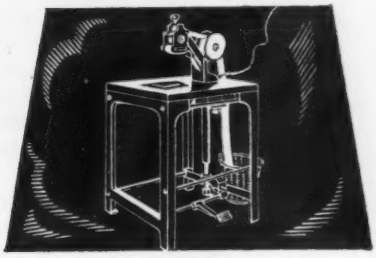
For 26 years the Kaumagraph Company has cooperated with manufacturers in the designing, registration and application of trademarks. This valuable experience is now embodied in our new 56 page book, "Half the Business Battle"—which deserves a place in your business library. A copy will be sent free on request.

KAUMAGRAPH CO., 350-356 W. 31st St., New York
Boston, Philadelphia, Chicago, Charlotte, Chattanooga, Paris, Ont., Paris, France

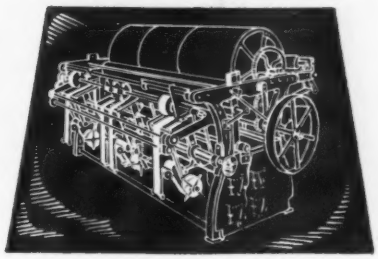
Reading Hosiery Transfer Machine
Operated by easy foot treadle, thus leaving both hands to handle the hosiery and transfers.

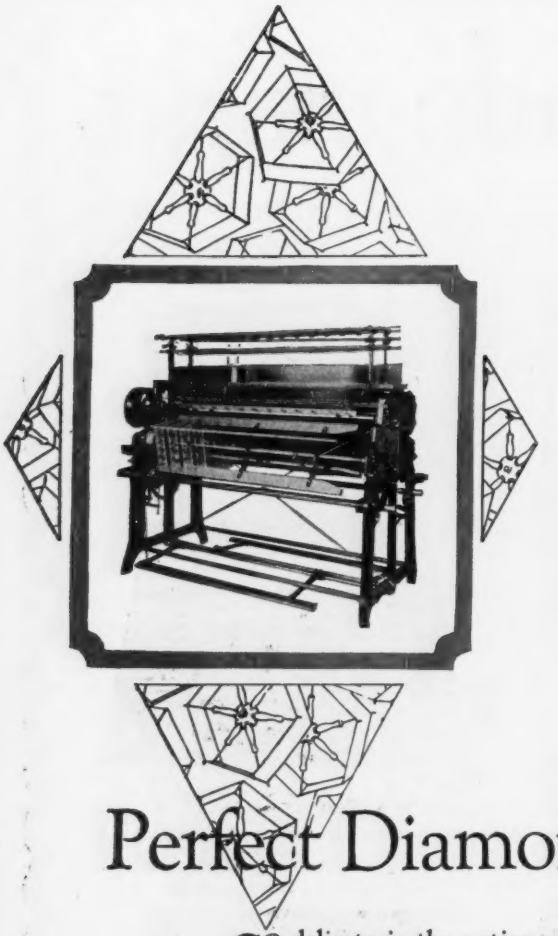


Kaumagraph L. G. Model
For marking skins. Makes possible very rapid marking of this unyielding material. For foot operation or with motor drive.



A. W. C. Measurer with 4 Kaumagraph Attachments
This trademarks the goods in four locations.





The Atwood 10K Reel

Good Reeling requires good equipment. The Atwood 10K Type (illustrated) is an improved labor-saving "Model of Perfection," as speedy and accurate in operation as the skill of Atwood engineers could make it. A conscientious regard for infinitely small details is evident in its improved design. The 10K has become very popular and is sold widely. Its performance has established its right to rank among the "Models of Perfection."

Perfect Diamonds at High Speed

So delicate is the action and adjustment of this improved type of reel that thread falls across thread forming exact diamonds, as the reel fly draws from the bobbin in building the skein. The reel flys, having either four or six arms, are furnished from 42 to 54 inches in circumference, and hold from eight to twelve skeins each, according to specification.

One of the fine features of the 10K Reel is in having the delivery spools placed above the reel fly. This makes work at the reel very pleasant and eliminates the tiresome back-bending necessary with other types. In starting the machine a foot treadle may be used, thus freeing the hands for more useful operations.

The stop and count motion is worked by electric contact. From the delivery spools the ends pass over adjustable tensions, through very light weight faller wires which stop the reel fly the instant a single end breaks. Length of skeins can be regulated up to 30,000 yards and the reel flys stop automatically when the full length of skein desired has been reeled.

ATWOOD MACHINE COMPANY

Stonington, Conn. 267 Fifth Ave., New York

ATWOOD MACHINERY SILK & RAYON

Representatives; W. A. KENNEDY, 1102 JOHNSTON BLDG., CHARLOTTE, N. C., E. G. PAULES, P.O. BOX 177, INGLEWOOD, CAL.

while those requiring a further adjustment can be set by inserting a screw-driver between the back of the sinker and the cylinder cap and gently moving the sinker in until a perfect pattern results.

The machine manufacturers recommend that the turn-backs be placed at the end of the pattern. However, I

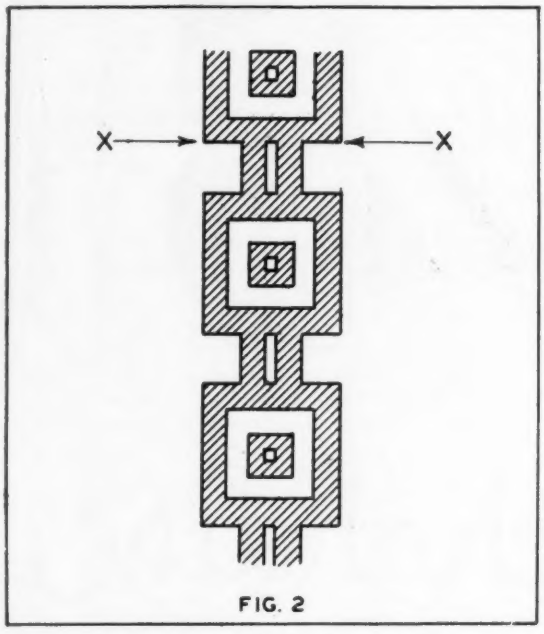


FIG. 2

have found that better results are obtained by placing the turn-backs in several places in the pattern, as shown at the points marked *X* in Fig. 2.

If any readers have questions to ask about reverse sinker plaiting, I will be glad to answer them to the best of my ability.

CONTRIBUTOR No. 4009.

Figuring Costs on Full-Fashioned Hosiery.

EDITOR COTTON:

Your readers may be interested in hearing from me again, because in the June issue of "Knitting Kinks," you published a letter from me asking for some methods of figuring costs on full-fashioned hosiery. Then in the September number I have read with interest the four replies you published giving different methods from different mills for doing this. All of these have helped in working out our own plan, and I thought it would be appropriate if I outlined to you the method we are using.

We clip the mercerized top, heel and toe portions and weigh them to determine the amount of this yarn going into the stockings. Every now and then we take off a dozen from a machine, dry it out and weigh it, subtracting the weight of the mercerized portions; this gives us the weight of the silk yarn used.

This method is used in going onto new styles. However, in addition it is found useful for checking purposes at more or less regular intervals. Every so often, by keeping the original figures on a style, we make a test to see if each machine is in good condition and producing the correct stocking. In this way we are often able to trace some troubles that might otherwise not be so apparent. The guides becoming rusty or rough would relieve the tension, causing the stocking to be knit loosely, or on the other hand, the stitches may be too tight, causing a variation in the amount of silk yarn used. All of these things show up from periodical tests of this kind. We mark each stocking with tuck stitches which permits us to trace any mistake back to the operator who knitted the hose.

CONTRIBUTOR No. 182.

Operating and Adjusting Scott & Williams Model H H Knitting Machines.

EDITOR COTTON:

In this letter, I am continuing the discussion of common difficulties and problems arising in the operation of the Model H H knitting machine. Previous sections of this discussion have appeared in the April and June issues. The concluding installment will be published in a later issue.

Breaking Cylinder Needle Butts at the End of the Stocking.

When the needle butts are breaking against the right stitch cam as the last movement of the drum takes place, which is the one that presses the work off the needles, see that the cylinder does not drop too much, as this is what brings the needles in contact with the point of this cam. This condition can be overcome by adjusting the screw No. 22631 down on the steel tube supporting the cylinder, thus preventing the cylinder from dropping to the point where the needles will come in contact with the stitch cam. If this is not practical with the class work that is being made, a longer cam can be placed in the line of the tension or stitch regulating lines on the main drum at the point where the cylinder drops.

Breaking or Bending Latches on the Cylinder Needles.

Latches will be bent if the conditions exist that have been described under the head of drop stitches in the gore and instep; namely, the latch ring projecting out beyond the gap closer ring, or gap closer ring being rough at the points where the needles are lowered by the dropper and the switch cam. They will not always be bent here, but sometimes it does occur at this point. Another place where the latches will invariably be bent is where the throat plate projects out beyond the steel inserts towards the center of the machine or where it is lower than these steel inserts. If it is necessary that the throat plate project at either of these two points, which is very doubtful, the edges should be rounded so that the latches can jam against them and bend. If the throat plate sets back behind these inserts or is a little higher up from the bottom of them, the latches will not be bent.

Centering a Dial Bracket.

On some machines it will be found that the dial cannot be lined up satisfactorily in the usual manner by adjusting it forward or backward. It will be okeh in some places and off in others. The cause for this is that the dial is off center, and can only be overcome by centering it up again. The procedure is as follows: Remove the dial, dial cap, gear cover No. 5223, dial shaft and spindle bevel pinion No. 6911 after seeing that the teeth are properly marked on this pinion and pinion No. 6912 so the two can be replaced in the original position. Next drive out the taper pins that hold the cross bar No. 5222 in place; loosen

Your Merchandise

The often intangible "something" that makes one article sell more than another is not so intangible when analyzed. Be your product underwear, hosiery or what, if put side by side with a competing equal priced article, the buyer will choose between them.

Naturally each article may have certain features, each appealing to a class of buyers and selling those certain buyers. However, there is an underlying foundation for choice which influences not just one class, but all buying classes—and the yarn in your product exerts a certain part of this influence.

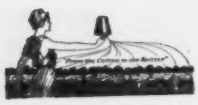
American Yarns give your product a quality foundation to start with. That means sales influence when on the counter with other merchandise.

The cotton in American Yarns is chosen from a select source. The spinning conditions are as perfect as modern equipment can make them. American Yarn mercerizing needs no explanation. An inspection quickly shows the unusually beautiful lustre.

Supervising this selection of cotton, the spinning, and the mercerizing is an organization long experienced in producing huge quantities of yarn, all of it exactly uniform and all with the same beautiful lustre.

It is not remarkable that American Yarns have made so great a success—for their users have profited through them.

Ask for Quotations on Any Number Yarn.



SALES REPRESENTATIVES

H. B. Robie,
93 Worth St., New York City.

E. L. Hicks,
833 Washington St., Reading, Pa.

Louisville Textile Co., Inc.,
Louisville, Ky.

H. B. Ketchum, Export Dept.,
42 Broadway, New York City.

G. C. Ellis,
Fairleigh Crescent,
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David Whitehurst,
409 Parkway, High Point, N. C.

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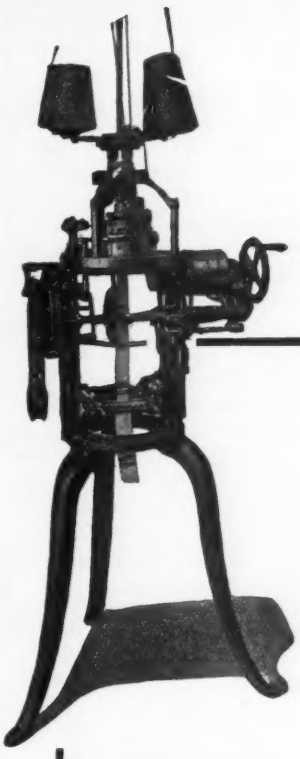
the holding screws No. 15278 slightly, not enough so the bar can move easily or slip around, but just enough so the bar can be tapped around with a hammer. Now place the centering disc, provided for centering a dial, within on the sinkers with the tail down. Lower the latch ring in position and insert the testing pin in the hole through the cross bar, When this is done the pin should drop all the way down through the disc if the dial is in perfect line, and if it is not, move the cross bar around by tapping with a hammer until it does pass down through the disc with a snap. When testing this out, the machine handle should be moved about 1/8 of a turn at the time and the pin raised up and dropped at each movement of the handle. This will be as good a test for the center as I know of. Be sure the pin drops all the way down and with a snap, for the best job. When this is satisfactory tighten the holding screws in the cross bar and test again with the pin, in the above manner, before reassembling or before reaming out the holes for the taper pins. These holes must be reamed out until they have an entirely new seat, or the cross bar will draw back to its former position when the pins are driven in. It will also very probably be necessary to have larger pins. Put back together and see how the dial needles line up with the cylinder needles or sinkers. It may be necessary to move the dial forward or backward a little after centering the cross bar or dial.

Regulating Length of Stitches in Rib Top.

In order to secure a longer or shorter stitch in the rib top one of two methods, or both, can be used. The best way, if plaiting is not being done, is to take some of the tension off of the rib top yarn. The other is to raise or lower the dial by means of the screw No. 15764 in the dial supporting yoke No. 9267. To get a longer stitch raise the dial by running the screw down or vice versa for a shorter stitch. Whenever the dial is raised or lowered, a corresponding amount must be obtained on the rib knitting and transfer cams by adjusting levers No. 5247 and No. 5245 which operate them. An eccentric is provided in the end of each lever for this purpose. These adjustments must be made when the thrust bars No. 9372 and No. 9373 are on the low step of the drum cams which operate them. When on this low step the respective cams must be down far enough to catch the high butt dial needles but clear the low butts and when the high butts come around the drum moves, pushing the cams down far enough to engage both high and low butts. Of course, the rib knitting cam functions at the beginning of the rib top, whereas the transfer cam works at the end of the top. These adjustments are very important and should be made, or at least checked, to see if it is necessary to make them, each time the dial is raised or lowered by means of this screw and should also be made before the machine is run by power, or a very bad smash may be the result of neglect.

Height of Dial After Top is Made.

It will be observed that the dial is up in a higher position after the top is made. This is done by means of cam No. 9359 and for the reason that the tooth sinkers would catch the fabric and punch holes if such were not the case, neither would there be room for the stocking to pass down freely between the cylinder and the dial. If the dial is too high, trouble will be encountered in the yarn changes; if too low the tooth sinkers will gouge holes in the stocking while the heel and toe are being made. Any desired adjustment can be secured by means of the dial



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raising rod adjustment plate No. 8288. This adjustment has no connection with the length of the stitches in the rib top.

Fitting a New Double Sole Finger.

In fitting a new double sole finger the most important thing is to have the length such that the end of the finger will just miss the needle heads as it goes up and down. When the machine is on the high heel or double sole, turn the handle until the short butt cylinder needles come in the back, then raise the finger up and down by hand and see that the end just clears the heads of the short butt needles. When the proper length has been obtained by grinding off the end, the end should be slightly rounded as this will prevent any catching on the needle heads in case any are slightly out of line. If the hole in the finger is too high when the finger is down on the throat plate, some will have to be ground off the bottom in order to have the thread or yarn well under the hooks of the needles. The plaiting in the double sole is usually better when the finger is kept rather high. It is necessary to strike a happy medium between the point where good plaiting can be secured and the yarn properly spliced in the sole and high heel.

Fitting a New Chain Pawl Plate.

The rule I always use in setting this part is as follows: First set the plate to be installed on the pawl so the elongated holes are centrally located with set screws slightly tightened. Turn the handle so that the pawl moves all the way forward, next pull the chain around until the link which throws the machine into the heel, or the same link at the toe will be just as good, comes in against the ratchet pawl lifter plate No. 8012. Be sure the link has never been filed or ground off in front, and has its original shape. Loosen the set screws and move the plate forward until it comes in contact with the tooth, in the chain ratchet and sprocket No. 6943, immediately in front of it. Hold the front end of the plate over to the right and fasten the set screws firmly. Watch the chain through an entire revolution as it passes over each link, and make any minor adjustment if any is necessary.

Fitting a New Medium High Splicing Cam.

First, remove the left hand up-pick unit and the left stitch cam. Now fasten the new cam in place with the screw provided for it, and have it come in against the stitch cam bracket with the end in the slot in the stitch cam bracket, in which position the end should just miss the medium butt needles and catch the long butts. If the long butt needles are pulled down far enough so the heads come below the throat plate, the body yarn is likely to be missed or thrown over these needles, especially if plaiting work is done, in which case the inside yarn is sometimes rolled over these heads. The remedy is to grind a little off of the bottom of this cam. One should go very slowly with this because if too much is taken off, the division between the needles will not be enough at the throat plate and difficulty will be had in getting the double sole yarn to enter and come out from the medium and short butt needles as it should.

CONTRIBUTOR No. 949.

Byles Purchases Interest in Southern.

C. A. Byles, well-known in the southern knitting trade, has acquired the interest of W. C. Ward in the Southern Mercerizing Co., Tryon, N. C., becoming a partner in the business. Mr. Byles will specialize in the sales activities of the organization.

The Proper Looping and Seaming Thread.

EDITOR COTTON:

In reply to the inquiry in a recent issue of "Knitting Kinks" from "Contributor No. 4008" as to the proper size sewing thread to use in seaming and looping 42-gauge full-fashioned hose, I would recommend from 80s/3 to 100s/3, mercerized. To make a small neat seam, it is necessary to use a fine thread. The thread should be as fine as the required strength will permit. The required strength is usually governed by the tensions on the sewing machines. A thread strong enough not to break down on the sewing machine is usually stronger than the thread which forms the stitches to be sewn, so it is folly to make one link so much stronger than another.

The things most desired in a sewing thread are strength and finish. For this reason a three-ply yarn for a given diameter is preferable, since a longer staple cotton must be used in spinning the finer counts, which gives a more uniform size, free of the many defects in the coarser counts. A three-ply thread is usually more neutral in twist and more adaptable to stitch formation.

CONTRIBUTOR No. 4011.

EDITOR COTTON:

In a recent issue, "Contributor No. 4008" asked for the proper size of looping and seaming yarn for a seven thread 42-gauge full-fashioned stocking. He said he has been using a 50s/2, but that someone had suggested that this was too heavy.

I don't consider 50s/2 very much too large for the purpose, but don't consider this thread best suited for the purpose. I would much prefer 80s/3 or 90s/3 mercerized sewing thread for the needle on either the looper or back seamer. 50s/2 might be used acceptably for the hook. Some manufacturers of 42-gauge six or seven thread goods are using 100s/3, but my judgment is that they are going to unnecessary expense in buying thread of this count. I might add that I consider mercerized yarn necessary for the needle thread only on looping or back seaming. We use natural thread for the hook thread on both looping and seaming.

I find that most full-fashioned hosiery manufacturers seem to have a tendency to put in too many stitches to the inch and run too tight a tension on their back seaming. A little heavier sewing thread with stitches around twelve per inch, with a fairly easy tension will, I believe, give much better results than fine count sewing threads with too many stitches and too tight a tension.

CONTRIBUTOR No. 4010.

EDITOR COTTON:

In answering the question of "Contributor No. 4008," as presented in the April number of COTTON, regarding the proper sizes of yarns for looping and seaming full-fashioned hose made with seven strand silk on 42 gauge machines, we would like to suggest that he try the plan we have adopted as the most practical.

For looping, we use 50s/3 Holmes spun and 50s/2 mercerized yarns, and for seaming, from the standpoint of strength necessary in the sewing and also in holding the two selvages together, we use for both threads, 50s/2 mercerized yarn.

We cannot readily see what would call for criticism due

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to the thread being too heavy. We have, however, had to overcome causes for criticism due to heaviness of seams, but have found that it was due to too much fabric being crowded into the seam by having the uncurling guide set too high or the operator holding the selvages too high while feeding through the guide.

Other causes may have contributed toward the making of a heavy seam, the principal one perhaps being too high a setting of the stitch tongues, around which the seaming chain is formed, allowing too much fabric to be turned over and sewed into the seam, but we have not found that the size of the thread can have any influence in that direction.

There is danger in using a thread that might be too light to stand the strain of pulling the selvages tightly together, as well as the strain of wearing and the stretch incident thereto, and chances in that direction must not be taken if our manufacturer friend wishes to avoid the ultimate consumers' displeasure.

We have in our experience run the gamut of trying tram silk, spun silk and combination threads, and for one reason or another, we have found that all of them have proven in practice inferior to the numbers suggested in the foregoing, and if the selvages on the goods are free from loops and raggedness, so often the cause of neglect in the knitting operation, the seams will be fine and neat, regardless of the weight of threads used.

Carelessness or too much hurry on the part of the operator, causing the fabric to be held too high in the feeding operation, may overcome the most careful adjustments on the part of the fixer responsible for the condition of the machines.

If the foregoing suggestions do not seem to cover the difficulties experienced, we would like to see a more detailed description of the troubles involved,and try to help our friend overcome his problems.

CONTRIBUTOR NO. 4021.

EDITOR COTTON:

I note that one of your readers, who is a manufacturer of full-fashioned hosiery, desires to secure information in regard to the proper size looping and seaming yarn to use for seven strand stockings. He states that he is now using 50s/2 Holmes spun yarn and has been told by another manufacturer that this yarn is too heavy for seaming. I might say that I agree with the manufacturer who states that 50s/2 spun yarn is too heavy, as I have found that a heavy yarn of this size will pucker up the seam of a seven strand hose and this makes the seam appear uneven and heavy.

In the seaming of full-fashioned hosiery, one must be sure that seams of light-weight hosiery are not too heavy, as this makes the hosiery very unsightly when worn. In order not to make the seam heavy, it is necessary to use a finer yarn and also see that the seaming machines do not take up too much of the selvage.

In the first place, I have found that a tight twisted yarn is not the proper yarn to use, as the tight twist does not give in tension and the result is that many complaints are received from customers that the seams are breaking out. By this I mean that when a stocking is worn, there must be elasticity in the seam, as well as the stocking itself, especially in the heel. Otherwise the seam will break out, even though the yarn used is stronger because of the hard twist. We formerly used a tight twisted yarn and received many complaints and when we changed to softer yarns, no more complaints were received. We make a seven strand stocking and we use for looping 50s/2 ply yarn and the yarn used is the same that is used for knitting.

For seaming we use 60s/2 ply yarn, which is also the same yarn that is used for knitting. The 60s/2 used for seaming is also used in the welt of our seven strand style number and we find this to be an excellent yarn for seaming this number. I know that many manufacturers buy special seaming yarns, but to me this always seemed unnecessary, as the ordinary knitting yarns have proven to be the best yarns to use for seaming hosiery.

I might say also that the yarns I have recommended should be mercerized; also that the yarns I use here are mercerized and also gassed. The gassing is not essential, but it is absolutely necessary that mercerized yarns be used, especially in the seaming operation.

The mistake sometimes made in seaming hosiery with the regular knitting yarns is that too many stitches per inch are put into the seam. Some hosiery contains as high as 18 stitches per inch and this is entirely too many stitches for any seam in any style or weight of hosiery. The number of stitches per inch should be between 12 and 14, and the tensions must not be too tight, as cotton yarns shrink in dyeing, and an allowance must be made for this shrinkage.

I can assure the reader, who asked the question, that we eliminated all our seaming troubles when we adopted the yarns and method described, and feel sure that if he uses the regular knitting yarns, instead of the tight twisted or spun yarns and sets the seaming machines so that they will seam hosiery, as I have described, that he will have no further trouble with his seaming operation.

CONTRIBUTOR NO. 4020.

Questions on Underwear Waste.

EDITOR COTTON:

Here is a question which I should like to see answered by a number of underwear manufacturers in your "Knitting Kinks" department:

What is considered to be a standard allowance for knitting and shaping waste when cutting—

A. Men's medium weight and heavy weight union suits.
B. Ladies rayon underwear.
C. Balbriggan underwear.
D. Fleece underwear.

I shall appreciate any information furnished in connection with any or all parts of this question.

CONTRIBUTOR NO. 4033.

1928 Edition American Textile Directory.

The 1928 edition of the Official American Textile Directory, known as the "Green Book", has been published. This contains the usual departments, brought up-to-date, giving detailed information as to the mills in the United States, Canada, and Mexico, classified lists of mills as to products; names of yarn and cloth merchants, bleachers and finishers, commission spinning, winding, weaving, etc. It is published in several editions, the price of the office edition being $5.00 per copy. A traveler's edition, available flexible cover, is $3.00; and vest-pocket editions, available for three sections of the country, are $1.50 per section. Bragdon, Lord & Nagle Co., 334 Fourth Avenue, New York City, are the publishers.

The Knit Goods Market

Hosiery.

Women's staples in full-fashioned silk have had an active session, with increasing shipments to the more important wholesale distributors. Leaving out of consideration the clamor of retailers for goods to be sold profitably at the counter for a dollar a pair, prices are holding with comparative firmness. A moot question is, can manufacturers supply a satisfactory dollar full-fashioned chiffon stocking? That enormous quantities of hosiery appear on the counters of the more dependable department stores and specialty shops exploiting the dollar price would seem to answer the question in the affirmative. It is reasoned that if the hose were not acceptable to a large element of the consuming public, sales would decline and dealers would be not so eager for dollar goods. As a matter of fact, demand seems stronger than at any time in the past, and mills are meeting it.

It is obvious that the popular price stocking cannot be of as good construction as those commanding higher prices, but if it represents good value for the money it will have a large following, and numbers of manufacturers are apparently taking this view, for they are in keen competition for the business which it has opened up, doubtless building their hopes on volume. But it appears that while the low price serves to stimulate sales, there is no material decline in the demand for the finer gauge staples for prices at anywhere from $1.50 to $1.95 a pair. That demand for this class of hose is continuous is manifest in the continued installation of machinery of 42- and 45-gauge, and no cessation of plant operation by those mills which have been in existence for some time. In fact, there is more expansion in the production of the high price than in the low price goods.

Necessarily there is much speculation as to how deeply rooted is the net hose fad and how long it will last. The Lehigh Silk Hosiery Mills, an exclusively full-fashioned establishment, reports well sustained demand for its net lines, and it is stated several retailer orders have been booked for late Summer delivery, which means that some dealers look for them to be worn in the early Fall. But, it is pointed out, undetailed orders are subject to cancellation, so that while dealers are protecting themselves, the manufacturers have only unsecured promises of the Fall business.

The fact that several of the leading New York retailers having an exclusive clientele saw fit early in June to cut prices of net hose leads some interests to believe confidence in it is not so strong as has been made to appear. These cuts may, however, have been deemed expedient for stemming the tide to the circular knit stocking, which costs the shopper over a dollar a pair less than the full-fashioned, and which is understood to be a sharp competitor of the glove silk.

One of the better known manufacturers of high grade ingrain silk hose is reported having decided to make none of the mesh variety, this decision having been reached after conferences with some of the better informed large retailers. Numbers of jobbers are afraid of it, and department stores are known to be putting it in stock on a very conservative basis. Thus far, as indicated by trustworthy mill reports, sales of net hose have not detracted from those of staples, which, of course, embrace the pointex heel, with around 30 mills being licensed by the Gotham Silk Hosiery Co. to manufacture it and jobbers generally handling it. Thus staples seem to be pretty safely anchored for at least the current season.

It is conceded that a factor in the hosiery price trend is the Bemberg dollar full-fashioned. Manufacturers are increasing their production of Bemberg hose, the Berkshire Knitting Mills, it is stated, having about doubled its output preliminary to distribution beginning July 1st by practically all jobbers carrying its silk lines. The point made by proponents of the Bemberg is that it gives service, something that is not widely claimed for the dollar all-silk.

Demand for Bemberg stockings has far exceeded supply, but that the yarn now is coming out in greater quantity seems indicated by the appearance on the market of seamless Bemberg, selling at 65 cents a pair. At the outset of the Bemberg sensation it was the understanding in the trade that the American Bemberg Corporation would restrict its use to only those mills knitting full-fashioned. A change in this policy may be significant, hastened, possibly by announcement of at least two new types of rayon yarn.

Experiments with Enka, a Holland yarn, are said to have proved highly satisfactory to the several manufacturers who have put it into seamless hose. Enka, a lusterless yarn, represents perhaps the nearest approach in appearance and touch to Japan silk that has yet been produced in the field of synthetic silk. Its cost is around 10 cents a pound more than that of 150 denier hosiery rayon, and in the neighborhood of 80 cents less than Bemberg. Jobbers who have been unable to obtain Bemberg on terms under which they could supply it to retailers for a dollar proposition are hot on the trail of manufacturers who have experimented with Enka., and it is understood a leading full-fashioned mill is giving Enka a tryout. Confirmed reports that the Viscose Co. has developed a rayon yarn to match Enka have bolstered the hopes of jobbers that developments in yarns will make for them a broader field of distribution, and the prediction is heard that the seamless industry will experience something in the way of a mild revival.

Seamless silk hose other than the finer gauge silk to top has touched the lowest price level since the beginning of the descent in values. Retailers say they can buy from mills on pretty nearly their own terms. A leading department store is maintaining regular sales of first quality silk from sole to four-inch lisle hem at 79 cents, and it is stated the stocking at this price shows a normal margin of profit. It is made with reinforced heel and toe, in both chiffon and service weight, the 79 cent price applying to each.

It would appear that something in the way of an improved rayon yarn is needed for keeping rayon hose on the map. Comparing the first four months of this year with the corresponding period of 1927, the total production fell off by almost 30 per cent, according to reports of manufacturers to the Department of Commerce, while seam-

less cotton lost only 14 per cent. The mill reports account for an aggregate decline of 756,427 dozens of seamless of all classes other than wool and wool mix, while the increase in output of full-fashioned silk increased by only 635,137 dozens, leaving a deficit of 121,290 dozens. The figures apply to only women's hosiery.

There are under-surface indications of a materially slower pace in expansion of the full-fashioned industry in the North. According to a well authenticated report, a Philadelphia corporation recently cancelled an order for 48-gauge machines and, it is stated, will install a silk throwing plant instead. Another is reported desirous of selling its plant, comprising fine gauge equipment, and is said to be looking southward, with the intention of entering the seamless field, which it has been engaged for some time. This attitude on the part of some interests toward pushing full-fashioned further may be accounted for, possibly, by the starting of a number of small mills in communities somewhat remote from the large full-fashioned centers, and increases in the equipment of some of the small concerns. There also is evidence of more dissatisfaction with the policies of most hosiery jobbers and the expediency for selling direct to the retail tradoe as a means of shortening the route between mill and consumer. But this is a too costly undertaking for any but strong and well financed concerns. It may be significant in this connection that the Cambrisa Silk Hosiery Mills, Philadelphia, and the Blackwood mill, in New Jersey, both under practically the same management, in June announced discontinuance of distributing through jobbers and hereafter selling to retailers in the larger class.

Market Conditions in Brief.

PREDICATED on the better tone in the hosiery primary markets as indicated in May and June shipments and a degree of price steadiness that had been lacking, opinion leans to a promise of a practically normal Summer business in women's lines, making allowance for the usual six to eight weeks seasonal lull. There are, of course, questions of construction which arise with the introduction of types of yarn that are calculated to cause manufacturers and distributors to proceed with more than ordinary conservatism.

Operations in knitted underwear seem likely to suffer some interruption due to problems involving the naming of prices for the next light weight season and the extent to which light weights may be favored for all-year-around wear, and, in sequence, a possibly lessened use of men's cotton ribs for Winter. The situation hinges around the one word uncertainty, which makes it appear that the waiting market may continue for some little time.

In sweaters there appears a more unsatisfactory situation than in the two other major divisions. Distributors had been giving practically no heed to prospective price advances for taking care of increasing yarn cost, leaving the bulk of their commitments to a time when demand from retailers will force action. A few mills are comfortably situated as to orders for carrying them through another month, but the rank and file will need business for keeping plants in operation at the stage prevailing in June.

Half-Hose More Conservative.

A trend to conservatism in men's fancy half-hose is the cue for predictions that novelties are waning and will pass out more quickly than they came in. Probably a more nearly correct view would be that wild patterns and giddy stripes will yield to the chaste and that the really profitable business for a time will be in higher priced goods. Neat vertical stripes in panel effect are picked as favorites, and of goods of this character, to sell for a dollar a pair, there is said to no plentitude, while of novelties for a price, in which must be included designs that have had their inning, there are some cumbersome holdings.

It seems pretty well indicated that popular novelty half-hose of the near future will not be knitted on the types of machines common a very few years ago. At the moment predictions of a decline in the use of fancies are not supported by any increase in demand for plain colors. As to solid color silk socks, output seems increasingly less, the drop being of small proportion, however. As the style trend in other lines is toward the artistic, there would appear little ground for presaging the vanishing of novelty half-hose. But it will be of more subdued designs, whether for the man who wears the 50-cent variety or the tasty dresser who would rather pay a dollar for something outstanding for individuality of pattern.

Boys' Hose.

Heavy ribs in boys' hose are coming from several of the interior Pennsylvania mills. The stockings, intended for the low price range, are knitted on old types of machines which seemed to have passed into the discard. They are in the field of juvenile golf hose, for which there is continuous ready sale. In fact, what are described as golf stockings are among the livelier items in children's lines, and mills specializing in them, in localities where there is an advantage in low overhead cost, appear to be having about all the business they can accommodate. Knockabout hose figures largely in the volume trading in juvenile goods.

With comparatively few important mills featuring the more dressy stockings, the market is absorbing the choicest selections, most manufacturers operating plants to capacity. Among the season's innovations for misses are several types of mesh hose, to retail at 75 cents to a dollar a pair. Both are of lisle fabric. The straight leg mesh is of length and size that adapt it to wear by women of slight build, this being stressed as a point in its favor. The lower price mesh has the roll top or cuff in conservative design. A part mesh, or lattice fabric, with cuff top, is of rayon plaited on mercerized cotton, and is designed for the half-dollar bracket.

Novelties in Mesh Hose.

Speaking of mesh hosiery, a southern mill brought out a line in the one time popular pineapple stitch. It is fairly good simulation of the net if knitted not too closely and may fill the bill as a low price proposition, that is, if nets as a class show any material speeding up in favor. Then there is an all rayon mesh, offered to jobbers at around $3 to 3.50 a dozen.

Infants' Socks.

Next in the limelight will be infants' socks. Jobbers will be looking over samples in the next few weeks, and it is understood they will see more of the straight top construction and less of the fancy than came out last year. The current season ends unsatisfactorily for all but a few manu-

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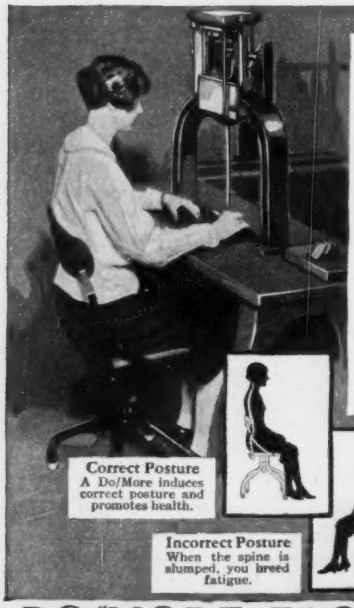

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You want to cut costs—and increase profits! You want better work from healthy workers! You can get it. Try a necessary number of Do/More Seating Units in a department where fatigue runs rampant—undermining work and workers alike! Make it a satisfactory trial—equip half the department with the adjustable Do/More—*at our expense.* Watch results! The decision rests with you. If they do not sell themselves—return them, freight collect. It won't cost you a cent!

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No need to wait—delayed profits never come! Clip and mail the coupon today. Fatigue is sapping work and dollars from your plant. Plug this profit-leak NOW.

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facturers, and at least two whose lines are well known in the trade would not turn down an opportunity to get out of business gracefully at not too much of a sacrifice. On the other hand, two others had their best season in years, and one is installing additional equipment, banking on even better results during the coming fiscal year.

Conditions in hosiery as a whole have subjected the primary markets to no end of slanderous criticism. From the complaints of some interests it might be assumed all were in the game for the mere pleasure of buying and selling, barely able to make ends meet. But here and there can be found a manufacturer, a selling agent or wholesaler who boasts of briskness with profits, and a casual observer can readily discern support for the boasting. True it is, the markets would not suffer if production were scaled by perhaps 10 per cent. But even with some surplus, the foremost factors are far from distress and the hindmost not facing anything more serious than thinner profits resultant from competition that perplexes, at times. Hosiery still remains the more attractive item in average textile staple lines, and there is nothing to indicate any change in the situation except for betterment.

Underwear.

If underwear manufacturers shall be guided by the majority sentiment in the matter of naming prices for the 1929 seasons, the openings of both Summer and Winter weights this year will be at a later date than usual. Ordinarily light weight samples are shown in July-August, some mills forcing the issue with side-door showings to favorite distributors, generally with not good results for the trade at large. Most manufacturers would rather not discuss the light weight opening. A very few are outspoken as in favor of September, others suggesting August. Where there is absolute silence on the subject it might be suspected that feelers are intended to be put out late in July.

In favor of a normally early opening is the need of one-season mills for business, lest plants be idle for a short time. Against this is the representation that many jobbers have been disappointed with the movement of what they own for the current season and would have no incentive to operate so long as they have hangover stocks. The situation as to knitted underwear is, of course, tied up with conditions in relation to nainsooks.

From the ruinously low prices that are heard for nainsooks, it appears stocks are unwieldly. Distributors suspect, at any rate, that holdings of manufacturers are large, and because of the apathy among retailers, the wholesalers are apparently in no mood to come to the relief of mills. But nainsooks are more and more a twelve months proposition, and goods made up for the Summer of 1928 can be moved out in the Fall perhaps as advantageously as at present. There is, however, a keen desire to push them on the market to stem the tide running strong to rayons. Thus it happens that dealers are able to pick up about all the nainsook underwear they can handle, at prices low enough to make it a good average asset for Fall.

It took some nainsook and knitted underwear interests a long time to wake up to the possibilities of rayon. They reckoned without considering the fact style is figuring to almost as great an extent among men as among women. Style is one of the big factors in this year's mixed markets for men's underthings. Much was predicted for shorties, and predictions have been pretty well visualized, union suits being to a considerable extent neglected. The Campe Corporation seems to have set out to keep the suits on the map, as indicated in announcement of a line of woven cottons that combine the features of the separate athletic shirt and separate running pants, which for trade convenience bear the name drawers. In the Campe garment, the separately-made shirts and drawers are joined at the waist, and this makes it a union suit, with the athletic cut for both the upper and lower parts of the garment. Descriptions of it reached distributors about the middle of June, so that it is too soon to say how the new cut has been received in the trade. The suit is made with fly-front and neck so low that but two buttons are required above the waist, which may be drawn in as tightly as the wearer may desire, a side tab providing for taking up slack at the waist line.

To some the Campe new line is viewed as having received its inspiration from rayon bobbies, of running pants length and athletic cut of the shirt part. One manufacturer of rayon bobbies is the Iris Knit Goods Corporation, in Pottstown, Pa., and that the company is satisfied with its sales seems indicated in the fact additional machinery was installed quite recently, providing for a 30 per cent increase in production. The equipment was taken over from the Glorie Knitters, a concern which sold to consumers through canvassers. This method of merchandising appears to have become unsatisfactory to the Glorie people, for they discontinued business. Women's rayon underwear still is a good canvasser proposition, but it is related men do not fall so easily for the glib talk of canvassers as do women. The Iris Corporation say that men's rayon underwear was quite extensively worn during the Winter, and its use for all the year around is expected to increase, which does not sound so well for either nainsooks or heavy weight cotton ribs.

Heavyweights.

Heavies for the coming Fall and Winter had a poor start, in what now is conceded to have been a premature opening, and subsequent happenings in raw cotton admittedly made matters worse, for a time, jobbers feeling they were in an advantageous position. So, contracts were withheld to a greater extent than could have been foreseen, and initial purchases were severely scaled. Buying has since proceeded on an ultra conservative scale, and in June it was a common estimate in the trade that hardly more than 50 per cent of a normal season's requirements had been contracted for.

With the holes in stocks that must be filled in the next month or two, if jobbers prepare for an average Fall distribution, there should develop some activity in the heavyweight markets. There remains the question of how far demand will be affected by the admittedly greater use of nainsooks and rayons for Winter wear. This will figure in the operations of jobbers in the heavies. Viewed in almost any light, it would appear that the markets for men's underwear of all classes will be dominated by style and that economic conditions will be a secondary factor.

According to reports in the Philadelphia cotton yarn trade, underwear mills recently were taking better deliveries of yarns, which would seem to imply they are booking some business, for no one suspects they are buying in anticipa.

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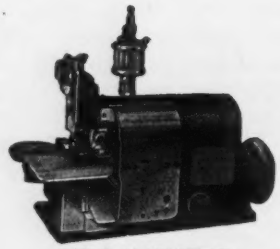

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For simultaneously trimming and joining ends of cotton, silk or woolen piece goods with a

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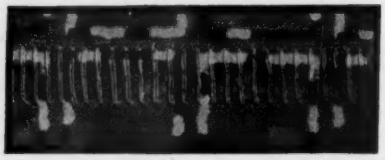

Butted Seam, natural size, made by STYLE 60 ABB MACHINE on Cotton Goods which have been subsequently processed. The STYLE 60 D3B makes a similar though much wider seam designed for use on sleazy or loosely woven goods to insure holding.

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Made in 5, 10, 25, 50 and 100 lb. sizes.

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SAMPLE DYERS

tion. Reports of improvement in deliveries are not general, but they come from representative spinners' representatives, who say shipments are in larger quantity and that there is call in some instances of advancing delivery dates. This was one of the more encouraging situations to develop in June, and leads yarn interests to believe an all-around betterment is not far distant.

Women's Rayon.

The popularity attained by women's rayon underwear and lingerie necessarily has turned attention toward Bemberg, and it may be significant that some leading retailers are featuring Bemberg hosiery and underwear jointly in their displays. Bemberg benefited by much gratuitous publicity when it was introduced in dollar full-fashioned stockings, and this is regarded helpful in its exploitation for underwear purposes. But to some it appears a drive in this direction might have been deferred to a more opportune time, for women's rayons, particularly of the cheaper types, have been and are being overproduced. This appears to be reflected in a halting movement of Japan silk underthings.

A manufacturer of silk vests and bloomers a few weeks ago offered to a large retailer midway between the northern and southern markets a large shipment on terms which were equivalent to consignment. It was stated to the dealer that unsold goods were to be returned, and there was no parsimony in the time limit. The incident was regarded as meaning there were some disturbing stocks of silk underwear, as there are of rayons—not because of any recession in consumptive demand, but for the one reason production had been excessive. This being the situation with regard to silks and rayons, as interpreted in the trade, some dealers hold that more exertion will have to be expended for putting Bemberg underthings across than if the drive had been earlier or deferred. But there seems little doubt that Enka and lusterlous Viscose will be knitted into underwear for the ensuing seasons, which may be one explanation for haste with Bemberg.

While no trade factor professes to have the evidence of women's cotton underwear recovering any of its lost ground, some fairly substantial orders for medium weight have been taken by several of the better known manufacturers, and the remaining mills, gradually diminishing in number, appear to be assured of a right good Fall business in vests and union suits. Upstate Pennsylvania manufacturers say they are measurably satisfied with the year's volume to June. Much of their product goes to chain stores and catalog houses, comparatively little of it being on the counter in shops and department stores.

Sweaters—Bathing Suits.

That sweaters are costing distributors substantially more money than was paid for what had been contracted for is indicated in the outcome of several meetings of manufacturers in Philadelphia last month. The attendance at the several sessions represented almost 100 per cent of the Philadelphia knitted outerwear industry, sweaters and bathing suits being the subjects for discussion. After two confabs, manufacturers withdrew their prices on June 6 and announced new prices immediately following the 15th. Just how much the advances amount to cannot be stated, except in a general way, as there was neither offered nor considered any form of agreement as to prices.

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Simplified Method of Pattern Change

All guess work and trial running is eliminated in setting-up patterns like the one illustrated, on the Standard Hosiery Machine. Patterns are laid out on paper in advance, and accurately set-up by arranging the jacks. Since no cam drums or special sinkers are used, pattern changes can be accomplished in much less than the usual time and with minimum effort.

These eight step, six color patterns are produced by reverse plating without floating threads, due to a positive method of needle control. Information regarding Attachment 31 sent on request.

STANDARD-TRUMP BROS. MACHINE CO., Wilmington, Del.

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Numbers of mills had been quoting prices representing losses of from two to three dollars a dozen for bathing suits and three to four dollars for sweaters. This was revealed when there was a general showing of cost sheets and price lists. In answer to the question why goods were selling at a loss to mills, the reply was some did not know their cost and others were willing to sacrifice rather than accumulate stock or make the humiliating admission they were short of orders. It was in overhead cost that the wide disparity was disclosed, the variation being around 10 to 12 per cent, while as to raw materials and production cost there was a variation of only about two per cent.

As the meetings were closed to all but manufacturers, there was little or no reluctance to a free exchange of information. As to what transpired, that had to be gotten from individual manufacturers after the final meeting. One admitted during the investigations that he had been knowingly selling his line of sweaters at a loss of three dollars a dozen, his price being $4.50 below that of a competitor. The reason he gave was that he intended to discontinue the line and had taken a short cut to getting out of business. He did not relish the suggestion that he increase his loss by another three dollars and end the agony the sooner.

One mill selling at two dollars a dozen lower than a rival explained that as the latter was conceded to be a wisely managed concern it was assumed to be making money, and it occurred to the other that there still would be a profit if a two dollars less price were taken. It developed that the rival was covered for worsted yarn requirements at a price about $1.25 a pound, comparing with $1.50 as the present cost, while the mill pricing its line by comparison was using yarn bought recently.

This was the first time that so many manufacturers had the courage to come together and lay their cost sheets and selling prices on the table for every local competitor to analyze. It is understood the movement inaugurated in Philadelphia has stimulated manufacturers in other large centers to take action for halting price cutting and getting something out of their plants besides anxiety as to means for keeping a pace ahead of bankruptcy. According to reports to the originators of the campaign, leading jobbers have expressed themselves as favorable to reasonable advances, provided there be no mills naming one price to some and a lower one to others.

It was thought after the meetings that, using a $42 sweater for an example, the increase would be from four to six dollars a dozen, and that average popular price bathing suits would be moved up around two to three dollars. A leading manufacturer, presiding at a meeting, said the increase ought to be the equivalent of 20 per cent of the cost of the yarn.

Sykes Brothers Open New American Office.

Joseph Sykes Brothers, Huddersfield, England, announce that Leigh & Butler, by mutual consent, have retired as their United States agent, and that a corporation has been formed under the name of Joseph Sykes Bros. (American) Inc., for handling their products. The new corporation is located at 137 Federal St., Boston, Mass. The repair plants at Charlotte, N. C., and Atlanta, Ga., will be carried on as usual under the personal supervision of Walter B. Pratt, southern agent.

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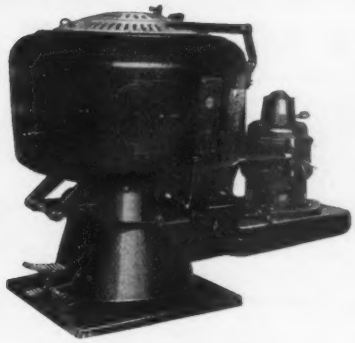

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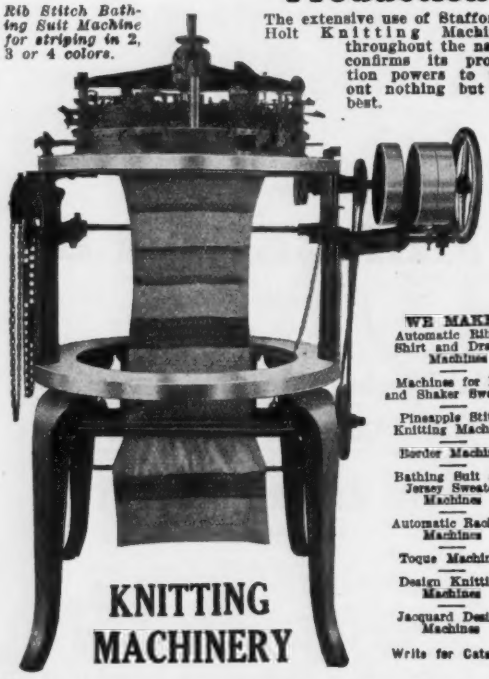
Rib Stitch Bathing Suit Machine for striping in 2, 3 or 4 colors.

The extensive use of Stafford & Holt Knitting Machinery throughout the nation confirms its production powers to turn out nothing but the best.



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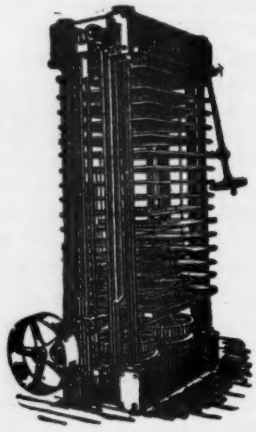

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Natural---Gassed---Dyed---Bleached
MERCERIZED YARNS
All Counts and Descriptions for the Knitting, Weaving and Converting Trade

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An Old Timer Says—

(*Continued from page* 937.)

portunity to paint the inside of the heads and we have a new beam at less cost than that of a new barrel."

"Well, how about those worn gudgeons or bearings on the loom beams?"

"Oh, we fixed that, too, by putting a different type of beam lock on the looms which lets the large part of the loom beam gudgeon form the bearing instead of the small offset part of the gudgeon." (I will be glad to furnish information as to this beam lock upon request.)

"You see, this rack is about waist high to the man, and is equipped with two bearings made of rollers for the loom beam to rest in so it will turn easily. Then we made the two cranks (one on each side) with the end of the crank to fit the nuts we put on each end of the iron rods. This crank not only gives him more leverage than a wrench, but it is always in place and speeds up his work. When he has trued up both heads, he puts the date on the loom beam barrel with a paint brush, in big figures, and the beam is ready for use as soon as the paint on the heads dries." (I will be glad to send a sketch of this rack to any reader upon request.)

"Gosh, you've got a lot of ends in that warp, Jim. What style of goods is that?"

"It's broadcloth, Old-Timer, and we have one or two other styles which have almost as many ends."

"How do the selvages run? Don't you have more ends broken, and more bad places on the selvages than in the body of your cloth? In other words, doesn't a weaver do more work on selvages than anywhere else?"

"Yes, I've noticed that, Old-Timer. We do everything we can to set our harnesses right and keep our shuttles smooth, etc., in order to help our selvages. We have also tried the double and twisted selvage, but the darn things give more trouble than the plain selvages."

"In what way, Jim?"

"Well, they won't dry as well on the slasher as the single yarn, and that causes the slasher man to run too much steam. Then they stick together. They don't have the same tension as the body of the warp, and a lot of other things, so we just went back to the plain selvage."

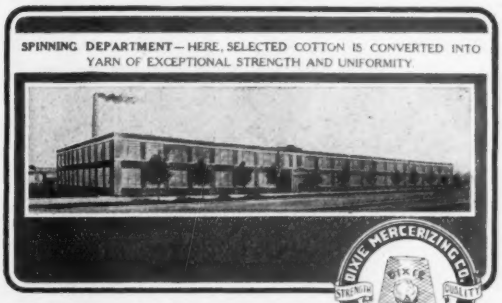
"Now, Jim, let me talk a little. So far I haven't seen anything I could help you much on, because your slasher room is in the best shape I have ever seen it, and much better than the average slasher room I go into. You have a good straight lease on your frames. You are putting the yarn on the loom beam in good shape. You are not drying your yarn too dry and you seem to have well prepared sizing. But I sure can tell you a thing or two about how to run double and twisted selvage!"

"Well, by heck, I certainly am ready to listen to you, Old-Timer. Let's sit down here on this beam and I will pull up that spittoon—"

"Cuspidor, you mean, Jim."

"Well, cuss it if you like, but I've said spittoon all my life, and that is good enough for me."

"First, Jim, do away with that creel I see you have been putting behind the slasher to hold the spools of twisted yarn, and go to your warper and put the spools of twisted yarn right in your warper creel so your twisted selvage will



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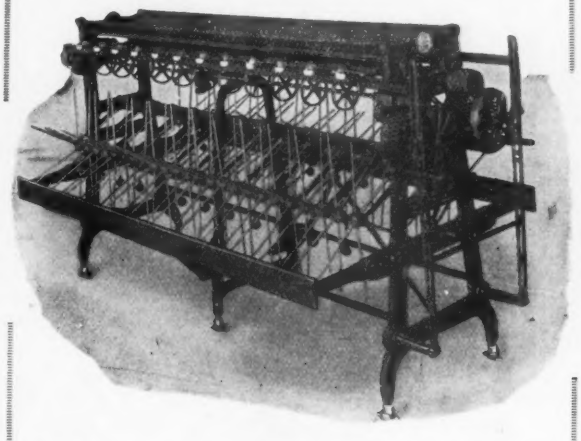

Type B O—Steel frame construction and patented rigid traverse motor for
SILK, RAYON and MERCERIZED YARN

THE SIPP MACHINE COMPANY
PATERSON, N. J.
Southern Representative
G. G. SLAUGHTER, Johnston Bldg., CHARLOTTE, N. C.

all be on one warper beam for a set."

"We tried that, Old-Timer, but the twisted yarn piled up too fast on the warper beam, and—"

"Hold on, now, I told you *I* was going to do the talking, so it is up to you to listen until I get through. As I was going to say when you butted in, skip every other dent in your warper comb where you have the double and twisted threads, and they will not pile up. Now put the warper beam containing the double and twisted threads next to the size box and run the twisted threads through your slasher. Here, give me a piece of paper and I will draw you a sketch. (I am showing the arrangement suggested to Jim in the accompanying illustration.)

"Now that double and twisted selvage will *run*, with that arrangement. It will dry on the slasher and it will improve your weaving production greatly, and it will reduce your seconds. Put it on all your heavy weaves and let it stay there. Have two or four plain double threads next to your double and twisted selvage so you can borrow an end or two if you have one to run out in your warp."

(Further details of the conversation between Jim and Old-Timer will be given in an early issue.—Editor.)

Texas Men Discuss Mill Problems.

(*Continued from page 916*)

age of production." He also stated that they have installed a recording thermometer on their size kettle, which gives them an accurate control on the length of time the size is cooked; and they have saved starch by putting an asbestos lining around the size kettle, adding that by doing this they are enabled to use size left over-night.

"We have a recording thermometer on the cooking kettle," said Mr. Clarke, "and you would be surprised how much help it is. At Waco the men swore they were cooking the size for 45 minutes, but when we put this thermometer on them it showed they ranged from fifteen minutes to an hour and a half, and you can imagine the variation in the feel of the cloth under those conditions."

"How long do you cook the size?", asked Percy Hunt of Bonham.

"We have a minimum of 45 minutes and do not go over an hour," responded Mr. Clarke. "I cannot see that it makes any difference between 45 minutes and an hour, and at the end of that time we cut the steam entirely off. I know that if you cook the size too long there is a chemical change takes place in the molecules and you haven't got starch—you've got something else. Dr. Catheart advanced that theory a long time ago but nobody seemed to believe him."

"We have also made a change in the weight of our lap," said Mr. Burow, "and since the first of the year we have overhauled all of our spinning, and are just about finishing up our carding. We are running a 12½ to 14 ounce lap, and increased our card draft from 98 to 117 and left the rest of the work the same, and our breaking strength on 23s warp yarn, from 15/16-inch staple, is 72 to 76 pounds."

This practically concluded the discussion. The closing feature was a talk by E. W. Camp, director, textile department, Texas technological school, Lubbock, Texas. Mr. Camp described the equipment of the school and outlined the textile course, and invited the cooperation of the mills.

It was voted to leave the place of the Fall meeting to the officers of the Association. The concluding session constituted a banquet at 12:30, with President Clarke as toastmaster. The Dallas Cotton Mills band furnished excellent music for the occasion, and W. S. Morton, who was the first president of the Association, and Robert W. Philip, editor of COTTON, made brief talks.

High Drafting.

(*Continued from page 917*)

The second top rollers in both cases are variable. The draft between the third and fourth rollers is 1.28 and between the second and third rollers is 1.55, thus reducing the draft between the front and second rollers. The second top rollers for medium and coarse counts are made of highly polished solid cast-iron with tapered nipples, while for fine counts they consist of steel tubing with cast iron ends and tapered nipples.

Another machinist advocates the use of a flexible shell second top roller as shown in the sketch, Fig. 2, with the same object as described in the first system. This roller comprises a shaft *B* with two loose bosses *C*, the shaft having a driving portion marked *A*. The bosses *C* and driving portion *A* are the same diameter and the whole lot is covered with a roller skin and by this means the bosses run at a constant speed with the bottom roller. The leather cot is in one piece and gives a concertina effect to the bosses *C* the idea being that each loose boss can accommodate itself better to the ends of roving passing through.

Merger of Root and Veeder Counter Concerns.

The Veeder Manufacturing Co., Hartford, Conn., and The Root Co., Bristol, Conn., have been merged as Veeder-Root, Inc. The former has for years manufactured small, high-grade counting machines and fine die castings, and the Root company are well known manufacturers of heavy duty counters, hinges and stampings. These two companies have for years been competitive in the counter field, but the development of each has been along different lines, the combination of which rounds out an unusual organization. The consolidation was brought about primarily by the desire of Curtis H. Veeder and David J. Post, sole owners of the Veeder company, to retire from active business and leave the management of their company in competent hands, it is announced. It brings under one management an extensive and scientific organization manufacturing counting instruments for every known use, it is stated. John T. Chidsey, formerly president of The Root Co., is president and general manager of the new company; Graham H. Anthony, formerly vice-president of The Allen Mfg. Co., is vice-president in charge of production; Ralph C. Coxhead is vice-president in charge of sales; and John H. Chaplin, vice-president in charge of sales of The Root Co., is the active sales manager of Veeder-Root, Inc. Both Mr. Post and Mr. Veeder will remain for a time with the new company in an advisory capacity.

It is understood that W. A. Kennedy, Johnston Building, Charlotte, N. C., who for several years has been the southern representative of The Root Company, will have supervision of the distribution of the new company's products in the southern territory.